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Services for Crippled Children in Massachusetts

Edward G. Huber, M. D.

The first Massachusetts clinic for crippled children conducted under the provisions of the Social Security Act was held in Pittsfield on September 2, 1936. This date meant more to the personnel of the central office and the field staff of the orthopedic unit of the Massachusetts Department of Public Health than appears to the casual reader, because of the long period of preparation for that clinic. All of us had worked hard for weeks getting ready, and when the time came for the first patients to be examined we were all somewhat under tension.

Five months before this first clinic, early in April 1936, the first steps were taken toward formulating a program which would be acceptable to the Children's Bureau of the Department of Labor. Before the end of that month, a state plan had been fairly well outlined and the preliminary organization determined upon. However, it was necessary to have the state legislature pass an Enabling Act so that the federal grant for the care of crippled children could be accepted. Every effort was made to have this act passed as an emergency measure but the legislature had before it various measures it considered much more important than that. Consequently, it was not until late in June 1936 that the act was in our hands and we could send the long-before-prepared plan and budget to the Children's Bureau. Approval was prompt as was the allotment for the fourth quarter of the federal fiscal year 1936.

The orthopedic unit in the division of administration of the Department of Public Health was immediately organized and the next three months devoted to preparing the ground work for the clinics. The Pittsfield clinic was held before all the state-wide preliminary work had been completed. We had concentrated on the western part of the state and were so desirous of seeing some of the fruit of our labors that we must needs have the first clinic as early as possible.

As the medical and surgical care of crippled children is a curative problem, rather than a preventive one, it is a new departure in the field of public health. It is a problem which primarily concerns the medical profession. The commissioner of public health who is responsible to the Children's Bureau for the conduct of services for crippled children wisely decided that since the physician is primarily interested, the members of the Massachusetts Medical Society should first be consulted.

Assistant Director of Public Health Administration, Department of Public Health, State House, Boston, Massachusetts.

The Massachusetts Medical Society is subdivided into eighteen districts. With the authority of the officers of the society, visits were made to all the constituent societies for conferences with the officers, committees, and various groups. Some of the district societies were visited several times and sometimes the plan was explained at regular meetings. The state plan was received with favor by all but a small but noisy minority who professed to see in it steps toward "state medicine" whatever that may mean, and encroachment by the state into the field of local clinics. After about three months of this campaigning the Council of the Massachusetts Medical Society unanimously endorsed the plan and approved the methods taken by the Department of Public Health in endeavoring to secure the co-operation of the members of the society. The basic principle of the operation of clinics for crippled children is that the Department of Public Health will administer the program for the Massachusetts Medical Society.

It was decided to define a crippled child as including those children under twenty-one years of age who are suffering from poliomyelitis, bone and joint tuberculosis, congenital defects, arthritis, and other similar conditions that may lead to or have produced crippling, and that may be treated advantageously. It is planned to include children who require plastic operations following burns and accidents, or with congenital defects, such as harelip, cleft palate, and so forth. It is not planned to include the care of children who are the victims of "acute accidents" or who require operations for hernia or for the removal of tonsils and adenoids, nor is it planned to provide custodial care for children of low mentality, or for others.

The only difficulties in interpreting this definition lie in drawing the line between medical and surgical care, and custodial care. Many orthopedic cases are rather protracted, but our guiding principle is to accept only those patients for whom active medical and surgical care is indicated, and who will thus be aided to become self-sustaining. Custodial care is necessary for many helpless cripples, it is admitted, but the provisions of the Social Security Act are specifically for medical and surgical care.

Eleven clinics for crippled children have been established. They are at Pittsfield, Springfield and Greenfield in the western part of the state, Worcester and Gardner in the central part, Haverhill, Salem and Lowell in the northeastern section and Fall River, Brock-

ton and Hyannis in the southeast. There is no clinic in Metropolitan Boston. This is in keeping with the spirit of the Social Security grant, that aid is primarily for those in the rural areas. Clinics are held in large cities, such as Worcester and Springfield, but this is only because clinics must be held where hospitals have orthopedic facilities. The city of Worcester has ample clinics in the city, conducted by orthopedic surgeons resident there, so that no children from Worcester are admitted to a state clinic for crippled children. Metropolitan Boston is also well supplied with orthopedic clinics, and it is not necessary to refer Boston cases elsewhere.

Wherever a qualified orthopedic surgeon, approved by the Massachusetts Medical Society, resides at a clinic center he has been selected to be the clinic consultant for that clinic. In five cities, Pittsfield, Springfield, Worcester, Salem and Fall River, this is the case. Drs. Francis A. Slowick, Garry de N. Hough, Jr., John W. O'Meara, Harold C. Bean and Eugene A. McCarthy are consultants for those cities respectively. Dr. Harry R. Wheat of Springfield is the consultant for the Greenfield clinic, and the other five consultants reside in Boston—Drs. Albert H. Brewster (Lowell), Arthur T. Legg (Haverhill), George W. Van Gorder (Brockton), Mark H. Rogers (Gardner) and Paul Norton (Hyannis).

The clinic consultants above-named comprise the professional staff. The administrative staff of the orthopedic unit consists of the central office, in the State House, and the field staff. The central office comprises the director of the unit, a secretary, a junior clerk, a statistical clerk, and a bookkeeper. The two last-named assist in administering other federal grants also. At the Lakeville State Sanatorium two physical therapists and a bracemaker are maintained from federal funds. The field staff consists of the supervisor of clinics for crippled children, two physical therapists, two orthopedic nurses and four social workers who divide their time between clinics for crippled children and other State Department of Health activities. Each physical therapist and orthopedic nurse has charge of the patients in a designated group of three (or two in one district) clinics. She attends to the multitude of duties pertaining to the patients in her district, such as getting them to clinic, getting consent for hospitalization, giving treatments, investigating new cases for suitability for admission to clinic, interviewing the family physician, the district medical society committeeman, and cooperating with local nurses, and various private agencies who help—in fact, many more such duties too numerous to mention. She is a busy person and soon is well-known in her district. Her capability for humanitarian activities is limited only by her time and inclinations.

Admission of a crippled child to a clinic is accomplished as follows: The first requirement is that the child be so situated economically that without this aid he would be unable to obtain the medical and surgical care he needs. In other words, his parents must be unable to pay a doctor or a hospital for professional services. Under these circumstances a physician may sign an application for the admission of a child to a clinic. This application must then be approved by a special committee of the local district medical society. In this way it is believed that clinic abuses can be avoided; that is, persons who are able to pay and should pay will not be admitted.

On admision to a clinic, a child is examined by the clinic consultant, who is in full professional charge of his clinic. The consultant is assisted by the supervisor of clinics for crippled children (a physician on the staff of the State Department of Public Health), by an orthopedic nurse or physical therapist and by a social worker if one such is available. As a result of his examination, the surgeon may recommend one or more of several things. He may consider it advisable to admit the child to a hospital for operation. If so, all that is needed is the consent of the parents; when this is forthcoming, the patient is admitted to any hospital designated by the clinic consultant. Local hospitals are used wherever possible, both in order to have the patients nearer home and to help maintain the institutions. Hospitals receive $3.50 per day per patient as well as fees for x-rays and for the use of operating rooms. These expenses are met by the Department of Public Health from the federal grant. The consultant is in full charge of the patient while the latter is in hospital and either operates himself or designates some other competent surgeon.

The definition of a crippled child includes those who require plastic operations following burns and accidents or with congenital defects such as harelip and cleft palate. Children afflicted in this way are referred by the clinic consultant to the plastic outpatient clinic at the Massachusetts General Hospital. If operation is advised after examination, arrangements are made for hospitalization in the Massachusetts General Hospital.

Many patients seen at the clinics do not require operations; they may need no other treatment than physical therapy. The consultant prescribes the treatment he wishes given and arrangements are then made for a physical therapist to visit the home and carry out the surgeon's recommendations. If possible, the patients in a community who require such treatment are brought together at some convenient available center and are there given treatment, thus conserving the time of the physical therapist.

Many patients attending the clinics require braces or other apparatus. Ample provision has been made to meet the needs of such children. On the prescription of the clinic consultant, any sort of apparatus desired is made by an experienced bracemaker and then at the next clinic is fitted to the patient by the consultant.

It is emphasized that clinics for crippled children do not supplant the work of any other agencies, public or private. In the language of the Social Security Act, the clinics exist to improve and extend existing services, —no more. They take up the work where other agencies are compelled to leave off because of lack of resources. There has been no tendency by any agency to cease its work. In fact there has been encountered a fear that the state clinics would so far eclipse other agencies that their usefulness would fade. By this time all such organizations who were doing useful work when clinics for crippled children began realize that their efforts are appreciated and that full cooperation with them is desired in order to aid when this is necessary.

The federal grant for this fiscal year is $85,000. The annual value of the aid given crippled children in Massachusetts before the federal grant was certainly far in excess of that amount. It is obvious that the federal grant could not possibly supplant existing services and that it must be used solely for services hitherto impossible because of lack of funds.

The Commonwealth is doing as much as ever for the crippled children at the Lakeville State Sanatorium. All children suffering from bone and joint tuberculosis are being taken care of there, as in the past. In addition, the general court, near the end of its last session, author-

ized the admission at the Lakeville State Sanatorium of victims of infantile paralysis. In order to treat the latter patients effectively, more equipment has been purchased and physical therapists have been added to the staff. As long as beds are available at the Lakeville State Sanatorium and at the Massachusetts Hospital School, which is also amply equipped to treat infantile paralysis, all such patients will be hospitalized at these institutions.

It is estimated that there are about ten thousand crippled children in Massachusetts. As a result of a survey made by the Department of Public Welfare in 1931, and of an annual census of such children between the ages of six and sixteen, conducted by the Department of Public Welfare and the Department of Education, there are now in the state register of crippled children over six thousand names. These children are all being investigated to determine their need of aid. Many of them have been well cared for and need nothing more. There probably are many crippled pre-school children whose names are not in the state register. Efforts are being made by the Department of Public Health to find all such children.

Through March 31, 1937, fifty-nine clinics have been held. At these clinics 345 children have been seen. Some of them have visited the clinics twice or more, so the total of clinic visits is 564. Not all the children for whom operations have been recommended have been admitted to hospitals. Many parents have refused consent, but fifty have entered hospitals, and there are a number of appointments to admit children to the Massachusetts General Hospital for plastic operations in the late spring and summer. Several of the orthopedic surgeons are also deferring operations until the schools close for the summer. More and more parents are consenting as time goes on and confidence in the clinics grows. Few, however, refuse physical therapy; consequently, approximately fifteen hundred treatments have been given by the field staff, in addition to the treatments given at the Lakeville State Sanatorium.

The Department of Public Health thinks that the aid given the crippled children of Massachusetts by the federal grant is sufficient to supplement all previously existing services so that it can now be said that no crippled child in the commonwealth need be deprived of medical and surgical care, or of needed appliances. Help is available; all they need do is to accept it.

Physical Therapy and the Growing Child

Carl C. Francis, M. D.

Physical therapy in common with all other branches of medical practice strives to restore an ailing body to a state of physical vigor, to bring back constitutional health to a part which has been damaged by illness or injury.

In the laboratory of Anatomy and the Associated Foundations we have been conducting a long term growth study of normal healthy children. One of the most important results has been the setting up of definite standards of constitutional fitness. We have found that X-rays give us most valuable information not only of the present health of the child but also of fluctuations in his constitution due to past illnesses or accidents. By the careful technic evolved through long experience in taking roentgenograms it is possible to get a clear distinction in the X-ray shadows of muscle, tendon, subcutaneous tissue, joint cavity and skin as well as bone. And it is by a close observation of X-ray density of these tissues and of fluctuations in the density that we are enabled to make an assessment of constitutional health.

Figure 1 shows the roentgenograms of two girls at the same level of physical maturity, about thirteen years. In the one, A (SS 171), note how distinctly the bone shadows are outlined. These bones are dense, contain ample mineral and therefore cast sharp shadows. In the other girl, B (SS 3327), the bones are poorly mineralized and the outlines are indistinct. The various bones of the wrist are difficult to distinguish. The technic used in taking the two films was identical and

Figure 1. Roentgenograms of the left hand of two girls at the same level of physical maturity. The bones of A are well mineralized and those of B are poorly mineralized. The bone shadows of A are distinct and those of B poorly defined.

Anatomical Laboratory, School of Medicine, Western Reserve University, Cleveland, Ohio.

Presented at the Semi-Annual Meeting of the Ohio Chapter of the American Physiotherapy Association, Cleveland, Ohio, on October 17, 1936.

differences noticeable in the two roentgenograms are due to actual differences in the mineralization of the bones of these two girls. The first girl, A, enjoys excellent health while the other, B, does not. A is robust, happy, alert. She has abundant staying power, is proficient in various sports and does not tire easily. She is a brilliant student and has a wide variety of interests and extra-curricular activities. She is serene, well balanced, emotionally stable and mature; and by all standards she is superior. The second girl has grown and matured slowly and although mentally normal she has not been outstanding in school because of difficulty in concentration and in prolonged mental application. She tires easily and is therefore not proficient in any sort of sport. Her activities are limited because of poor staying power and quick fatigue. These two girls were chosen because they show the marked contrast which may exist in the density of the various tissues and relation of these variations to health and vigor.

Muscles and spongiosa of the bone act as a storehouse for mineral reserves which vary with physiological demand. In Figure 2 we see the roentgenogram of the left hand of a young mother. A was made the day before the birth of her baby and B was made three months later. In A, muscle and bone shadows are moderately

Figure 2. Roentgenograms of the left hand of a young mother. A was taken the day before the birth of her first child and shows dense bones. B, taken three months later, shows lighter shadows as a result of mineral drainage for lactation.

dense. In B, we note that both the muscle and bone shadows have been drained of their mineral. Delivery and lactation have made great demands upon the mineral reserves of the mother since her child secured the building material so necessary for his rapid growth and development. It is obvious then that the mother must have a diet very ample in mineral if she is to supply her child with material for his growth and not at the same time rob herself.

The rapid growth of adolescence is a great physical strain. Figure 3 shows the roentgenograms of left hand of a boy (SS 172) who grew eighty-five millimeters in height during the year's interval before X-ray A was made. He had a diet very ample in mineral during this

Figure 3. Roentgenograms of the left hand of a youth, taken one year apart. In the year before A he grew eighty-five millimeters and between A and B twenty-seven millimeters. There was a temporary depletion of mineral reserves to meet the demand of rapid growth. The reserves were restored when growth became less rapid.

period but the demands of growth were so great that the intake in food could not meet it and he had therefore to draw upon his reserves. In the interval between A and B he grew only twenty-seven millimeters, thus enabling him to rebuild his reserves.

The poor posture and lowered foot arches of the adolescent are merely another expression of the increased demand for mineral at a time when the skeleton grows rapidly. On roentgenograms made at this time the bone shadows are less dense because of excessive mineral drain. The muscle tone is also diminished and fatigue appears more quickly with resultant sag in posture and foot arch. The usual difference between standing height and recumbent length is not more than ten millimeters but during the period of rapid preadolescent growth the difference is frequently twenty or even twenty-five millimeters.

In Figure 4 we see footprints of a boy before, during and after a period of great increase in stature. First the arches are high, then become lowered to be raised again when constitutional reserves are restored after the period of rapid growth has ceased. This strain of adolescence is also expressed in difficulties in concentration in school, in irritability and various emotional outbursts and in "laziness." The adolescent is not truly lazy. It

is merely nature's means of preventing overstrain during a critical period.

There may be localized fluctuations in density as a result of injury. One boy broke his radius three weeks

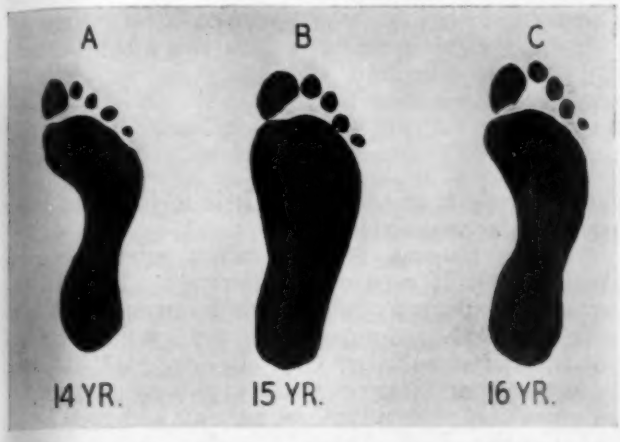

Figure 4. Prints of the right foot a boy made before, during and after a period of great increase in stature, showing a temporary lowering of the arch during a period of rapid growth at fifteen years.

previous to our X-ray. The X-rays show the fracture to be uniting but the line of fracture still quite evident. Muscle and bone shadows are much lighter in this hand than in the rest of the body. We do not know the reason for such localized drainage but it certanly occurs. Three months later reserves are completely restored and the only remaining evidence of the fracture is a line of denser bone at the site of the fracture.

Here you see one of the fields of physical therapy. Naturally anything which increases the blood supply to the part will bring in mineral to build up the depleted reserves and restore tone to the muscles.

We have also seen such localized loss of mineral reserves in other injuries. We have one boy who cut the tendons of certain flexor muscles at the wrist and carried the hand in a splint until the tendons had united. He was then treated by the physical therapy department of Lakeside Hospital with excellent results. As normal function returned to the injured hand the shadows of bone and muscle again became clear and well defined.

Sprains likewise can be demonstrated on the X-ray. A girl fell heavily on her outstretched right hand. The wrist was swollen and painful and the roentgenogram taken six hours after the injury showed no broken bones but showed that the normal distinction between skin, subcutaneous tisue and muscle tendons had been lost because of swelling and hemorrhage; the radial collateral ligament is thicker than normal and not well defined and the tendon of the abductor pollicus longus is widened and laminated. Seven months later, after the swelling had gone and the outward appearance of the wrist was normal again, another roentgenogram was made. The radial collateral ligament and tendon to thumb are still rather indistinct and have a "frayed" appearance. The girl, at the time of the second roentgenogram, still complained of weakness and discomfort in the wrist after exercise. The X-ray confirms her symptoms of imperfect restoration.

Figure 5. Roentgenogram of the right knee of a boy who developed acute arthritis. Contrast the appearance of the normal left knee. In the latter the patella is distinct, the joint cavity well defined and the patellar ligament clearly outlined.

Figure 5 shows the right and left knee of a boy who developed an acute arthritis of several joints. The right knee was extremely painful and swollen but the infection subsided without drainage and without any destruction of bone. The subcutaneous tissues are edematous, muscle tendons and ligaments are swollen and the bones greatly demineralized. Note the sharp well defined outlines of the other knee. There was great limitation of movement and very poor function after the infection had passed. The left wrist was opened and drained for some time and on those X-rays a wide-spread destruction of carpal bones is evident. The right hip was also involved and drained. Such cases are familiar to all of you. By various measures, the details of which are more familiar to you than to me, we may hope for great improvement. By stimulating the blood flow the edematous fluid will be removed, bones and subcutaneous tissue will be restored to health, muscles will be encouraged to function and joint movements will become more free.

Another boy suffered from an extensive paralysis spreading over all extremities, trunk and neck. He had early treatment and made a remarkable recovery, the only trace remaining when we last examined him after months was a slight weakness in the muscles of calf. X-rays taken during convalescence show extreme demineralization of all bones but, with restored health, bone mineral is restored. When a limb is injured it is obvious that all the tissues, bones, muscles, tendons, ligaments and subcutaneous tissues will be damaged. All also share in the healing process and all give evidence of improving health. For tissue restoration efficient circulation and normal nervous control are of course essential.

Another observation which will be confirmed by you all should be mentioned in closing: the constitution of a child is marvelously resilient and with proper help, a sick child is restored to health in a remarkably short time. This is why we are able to demonstrate so readily the tissue changes of health and incipient disease in childhood.

Occupational Therapy*

Gladys Pattee, O. T. Reg.

As physical therapists I believe you will be the most interested in occupational therapy as it is used for curative exercise. This is the phase of occupational therapy which coördinates with, and to a large degree dovetails with, physical therapy, since the object of both methods of treatment is restoration of joint and muscle function. However, in case you might be interested also in the rest of the field of occupational therapy I shall mention first very briefly those other aspects.

At present occupational therapy is used mainly in three types of hospitals; namely, mental, tuberculosis and general hospitals, among which are included orthopedic services.

In mental hospitals occupational therapy has been used longer and more extensively than in any other type of hospital. It is considered by psychiatrists as one of the most valuable aids in the treatment of mental diseases. It affords to the physician an added opportunity for diagnostic observation and for noting the progress or regression of the patient's condition. The therapeutic value to the patient has been summed up by Miss Marian Medd and the following classification suggested: (1) occupational therapy furnishes an acceptable contact with reality; (2) it transfers unhealthy interests to interest in creative work; (3) it permits aggressions (or displeasure at the situation) to be expressed with tools on material, and (4) it provides expression, with social approval, for harmless propensities and activities which the patient has formerly regarded as taboo.

Of the many types of patients in a mental hospital each requires a special kind of occupational therapy. There is the patient who is very excited, restless and desirous of activity, and who by his mere presence in a room creates an atmosphere of suspense and unrest. The occupation given to such a patient should be of a kind to require close attention and activity, with a rhythmic repetition in order to use up physical energy and replace it with something suggestive of calmness. For example; textile weaving on a hand loom, pounding out bowls or other articles of pewter or copper, making hand built pottery dishes, knitting, crocheting, and so forth, all of them calling for physical activity, concentration and repetition. Almost the exact opposite type is the depressed patient who needs to be stimulated and aroused to a more normal outlook. In his case the occupation given him should have variety and not so much repetition in order to hold his interest. He should make such things as small articles in metal which require a little hammering to acquire shape, a little sawing and a little soldering, all to make one article. Pattern weaving with several colors on a textile loom, or wood carving or painting are desirable crafts for depressed patients.

Dr. William Rush Dunton has said that in a mental hospital, "the primary object in applying occupational therapy is re-education. It is to inculcate better habits of thot and action."

In the hospitals for tuberculous patients occupational therapy is used quite differently. For bed patients with pulmonary tuberculosis its main object is to build up morale and to establish and maintain a tranquil state of mind. Dr. Guy H. Fitzgerald has said, "Mental content is as necessary in successful treatment (of pulmonary tuberculosis) as pure air and good food." And Captain J. R. Byers, Canadian Army Medical Corps, said, "I am firmly convinced that in the application of properly regulated work of an interesting nature in the treatment of pulmonary tuberculosis we have added a fourth word to our code which should read, rest, fresh air, good food and work."

For bed patients in this type of hospital very light occupations are usually prescribed by the physician, and close watch is kept as to the patient's reaction. Pulse and temperature indicate how much a patient is capable of doing without danger of fatigue or overexertion. Certain forms of craft work have been studied to determine the exact amount of effort required and the extent of movement of muscles of the chest and arm. These occupations can be given in specified "doses," beginning with short periods and increasing as seems advisable. Close coöperation between the physician and the occupational therapist must be maintained at all times. When the patients are ready for dismissal, occupational therapy is sometimes used as a hardening process, getting the patient accustomed to a daily routine as nearly like his life on the outside will be as is possible. Sometimes it is possible for the patients to carry on the same type of work as their former occupations; for instance, work in the print shop, book-bindery, clerical work of all kinds such as typing, bookkeeping, or even the more strenuous work about the institution, in the gardens and so on.

In general hospitals there are two types of therapeutic occupations. They are (1) functional, those by which it is desired to restore joint and muscle function, and (2) non-functional, those which are applied in medical cases such as colitis, diabetes, cardiac disease, and other chronic conditions, and those which are applied in surgical cases. The surgical patients concerned here are those who are in the period of postoperative convalescence and those who have undergone orthopedic operations following which special exercises are not required, such as the Albee operation and amputation. Other orthopedic patients who require nonfunctional treatment are those whose members are in casts.

No person who is sick or injured is in an entirely normal state of mind, and the psychologic effect of a pleasant occupation is a quality necessary and beneficial to him. Patients with chronic disease of long duration, for whom occupational therapy has been prescribed, gain an interest outside the hospital's four walls and have their attention taken from their immediate pain and worries. They are encouraged by the proof given them

*Read before the meeting of the American Physiotherapy Association, Rochester, Minnesota, July 1, 1937.

Section on Occupational Therapy, The Mayo Clinic, Rochester, Minnesota.

that they are not entirely "down and out" as long as they can make an attractive, desirable article from raw material. The treatment is normalizing. Dr. William R. Dunton has said, "It is well known and generally acknowledged, that discontentment and unhappiness are associated with, or produce, physiological changes, so that if we can give such a patient an interest outside of himself and make him more contented and happy we will aid in his recovery." Of certain patients having colonic disorders Dr. J. A. Bargen, referring to occupational therapy, wrote in his book, "The Management of Colitis," "This form of treatment is invaluable for the more chronic, although severe, cases without fever. These patients should not be kept in bed but should have a very positive program of mild activity."

In prescribing occupational therapy for patients with cardiac disease, there is sometimes difficulty owing to the apprehension of the patient, who has been afraid to make the slightest effort. This must be overcome and his coöperation secured. Dr. Canby Robinson stated: "Contented, happy patients, free from worries and from fretful desires, progress faster and farther than those who are mentally in a turmoil, although they may be physically at rest. The influence of well directed occupations on the emotions is undoubtedly good for heart cases, and it fits in perfectly with the accepted ideas of treatment. Patients whose usual treatment has been supplemented by occupational therapy get along better than patients who have not had it."

And for such patients as those with orthopedic conditions who must spent weeks in bed, in casts, by keeping their free muscles active, those muscles are prevented from becoming flabby from disuse, the circulation is increased and this helps to prevent congestion.

When occupational therapy is prescribed as curative exercise to assist in the restoration of joint and muscle function there must be the closest coöperation with the physical therapy department in order to insure the best result to the patient. Although some form of physical therapy often precedes occupational therapy, when the latter is indicated it can be of considerable assistance in securing the free use of muscles and joints. Part of its success is owing again to the psychologic factor, as the patient's complete coöperation, indeed often his extreme enthusiasm, in the exercise, is gained through his interest in the project on which he is working. It is far more interesting to weave a colorful piece of textile which can be taken home to be admired than it is to squeeze a rubber ball day after day. Yet the same action of the joints and muscles of the hands are used in both exercises. This is the reason an occupational therapy department uses crafts as a medium and tries to attain variety in the occupations offered patients, so that people of different tastes and desires may still find the thing which will give them the exact exercise required and also interest them. It should be emphasized that the article or project is never of primary importance but always secondary to the effect on the patient.

Spastic patients who are referred for occupational therapy at The Mayo Clinic seldom stay long enough for us to see any change, and our few treatments become mainly demonstrations to the relatives of how the work should be carried on at home.

A typical case of arthritis is that of a school girl, nineteen years of age. The diagnosis was rheumatoid arthritis involving the ankles, knees, back, shoulders, elbows, wrists and fingers. The illness began about 1933 and was marked by fever, swelling and stiffness in metatarsophalangeal and tarsal joints. During the following year it progressed to the sacroiliac region and to the shoulders, elbows, wrists and knee joints. As the disease progressed there appeared limitation of motion in the affected parts and finally deformity of more severely attacked joints. On February 24, 1937, occupational therapy was first ordered for exercise of the shoulders, arms, and fingers. Treatment was started by having the patient work on a hand loom for forty-five minutes. Blocks were fastened to the beater on the loom to give greater extension of the fingers. As no prolonged soreness resulted from the amount of work done, the time was increased to fifty minutes the following day and gradually increased more from day to day. Two weeks after work was started the patient was working on the hand loom, jig saw and at basketry for two hours a day. Later the wall loom was added for more exercise of the shoulders and elbows. The patient was dismissed April 19, 1937. Motion of the right elbow had increased from 80 to 105 degrees; of the left elbow, from 70 to 115 degrees; of the right wrist, from 75 to 90 degrees, and of the left wrist, from 75 to 100 degrees.

Another patient, a man of middle age, recovering from an injury to the brachial plexus, was referred for occupational therapy on October 24 and had treatments until June 1. When he first came to the department he was given work on a textile loom to gain flexion of the nngers and pronation of the forearm. He had very little strength in the hand and wrist and was able to weave only about a quarter of an inch before his hand became too tired to work. In two weeks he was able to work tor an hour a day and could carry his arm with the palm of his hand against his side rather than with the palm up, as it was carried when he came. One month after his admission he could weave 8 inches without tiring his hand. At the time of dismissal he could use his hand normally and wove both morning and afternoon.

"Few schools are giving adequate attention to instruction in physical therapy. The great benefits which may be derived from this form of treatment have been clearly demonstrated since the war. Every physician should be familiar with the indications for physical therapy and with the results which may be attained by its use."—From the *Report of the Council on Medical Education and Hospitals, Jour. A. M. A.*, June 19, 1937.

The Organization of a Teaching Clinic for Physical Therapy

Carolyn M. Brown

With the more or less recent development of several highly specialized and technical branches of physical therapy which have been added to the generally accepted list of physical agents we, as the representatives of our national organization, are confronted with the necessity of aiding the medical profession in providing adequate didactic and clinical instruction in these newer fields.

For many years physical therapy consisted of the application in various forms of a few simple fundamentals such as heat, massage, motion and electricity. In most hospitals and clinics, patients were referred with or without a diagnosis simply for treatment, which was left entirely to the discretion of the person in charge. The usual reason for referring the case was to rid the surgeon or physician of a patient who was still incapacitated or ailing after all other forms of treatment had been exhausted. Without specific directions and with only a slight knowledge of anatomy and physiology and none whatever of pathology even in the case at hand, the physical therapist had recourse to one of three devices. The patient might be soothed and satisfied with heat and massage. He might be coerced into submitting to manipulations, however painful, or, thanks to manufacturers of electrical devices, he could be tremendously impressed and treated profitably for an indefinite period with a machine guaranteed to cure anything from ununited fractures to blind staggers.

For most of us these halcyon days are gone with the wind or the N. R. A. We are now required to make accurate qualitative muscle examinations to aid in diagnosis or determine progress, to make differential spastic muscle examinations, to use progressive relaxation[1] and to follow with reciprocal exercises started proximally, to soothe and apply a protective dressing to a perfectly fresh joint fracture and to follow this with daily relaxed motion,[2] to give asymmetrical exercises to just the right muscles in structural scoliosis and to teach everything, from standing balance in a palsied child to an advanced course, in posture, and not only to do the work but to obtain satisfactory results. I am, of course, well aware that such work is done only in clinics supervised by men of outstanding ability in this field but a listing of the requirements for technicians in such places indicates what has to be taught in a teaching clinic.

The Council on Physical Therapy of the American Medical Association has set standards of preliminary education and listed required courses of instruction for approved schools and it is not my purpose to discuss the preliminary or basic aspects of this subject. The phase of the work which I am trying to present is the development, or organization, of a teaching clinic for advanced work in the subjects outlined.

There are certain fundamental requirements for this which we may consider. First, supervision by competent medical authority. Second, an endowed or publicly supported institution or clinic having adequate clinical material, and third, an organized technical staff for teaching and supervising work in the various subjects. It is this last requirement which will be discussed.

The basic organization for this purpose should consist of teachers qualified in body mechanics including scoliosis, muscle conditioning and reeducation in spinal and cerebral palsies, mobilization in fractures and dislocations, speech training and occupational and vocational therapy. A technical discussion of any one of these subjects cannot be undertaken here but some of the salient features may be mentioned.

The work of Mensendieck in body mechanics emphasizes normal individual muscle function in the control or prevention of emergency and assisting action in the development of static defects. Her work is comprehensive from a mechanical standpoint and should not be confused with the impractical and frequently false conceptions of other writers in this field. It is, however, necessary to modify her system to meet the requirements of each case on a basis of existing pathology because her work is conceived from a purely physiological standpoint. This means that all cases of structural dyskinesia should have training and exercises adjusted on a pathological basis for correction or control depending on the progressive character of the disorder. In extremely brief form the foregoing paragraph is a practical outline for teaching body mechanics and muscle training.

Immediate and early mobilization in fractures and dislocations, as developed by Lindsay and Brown, opens up a field of physical therapy heretofore neglected. By its use the majority of fractures about the joints may be mobilized painlessly, thereby avoiding the loss of contractility and elasticity of the soft tissues and resulting in a restoration of the joint surfaces impossible to obtain by manipulation or surgery. The underlying principle in this method is the action of gravity on a relaxed extremity and instruction in the work should be didactic and practical. It should include a simple presentation of the principles of bone regeneration and a discussion of what may be accomplished by the method in addition to detailed practical instruction.

Speech training should be undertaken only by those specially trained in this field. In years past it was impossible to find teachers who understood our dysarthritics. Their training was almost entirely limited to teaching stammerers. Today, we have schools specializing in speech training for such speech defects as we find in the cerebral palsy departments of our clinics. Every clinic should employ one or more of these teachers. The physical therapist should cooperate with the teacher in the matter of breathing and tongue exercises, especially in cases in which the breathing is uncontrolled or reversed.

Occupational therapy is a most important adjunct of physical therapy. The versatile therapist not only

Instructor in Physical Therapy, School of Medicine, Yale University.

teaches crafts and keeps patients agreeably occupied but often enables him to be self-supporting and independent. There is very little appreciation of the advantage in the use of occupational therapy in conjunction with physical therapy. The time occupied in the actual treatment is not sufficient to overcome the inertia between treatments or the incorrect use of the muscles when activity is not supervised. Properly arranged occupational therapy provides the means of avoiding these difficulties and can be so adjusted to meet the requirements in almost every case.

There are various other phases of the subject which might be mentioned, such as the education of parents or home attendants and special devices for obtaining the cooperation of patients. However, in this necessarily limited discussion brevity is relied upon for emphasis and it is hoped if any interest is aroused, that a general discussion will develop these and other features of the organization of a teaching clinic.

Bibliography

1. Jacobson, Edmund, M. D.: The Technic of Progressive Relaxation—General Form, Principles and Practice of Physical Therapy, Vol. 3, Chapter 18, W. M. Prior Co., Inc., Hagerstown, Maryland.

2. Lindsay, Merrill K., and Brown, Carolyn M.: Relaxed Motion in the Early Mobilization of Fractures and Dislocations, Principles and Practice of Physical Therapy, Vol. 3, Chapter 16, W. E. Prior Co., Inc., Hagerstown, Maryland.

3. Mensendieck, Bess M.: The Mensendieck System of Functional Exercises, Southworth Anthoensen Press, Portland, Maine.

Artificial Fever Therapy

Effect on Gonococcic Infections

M. K. Newman, M. D., and J. M. Berris, M. D.

Artificial fever therapy, a most recent addition to the therapeutic armamentarium of medicine, was recently declared to be one of the five greatest advances in treatment during the past decade. The first reference to the use of artificial fever occurred during the Greco-Roman era where are described palatial establishments occupying the equivalent of many city blocks, being well attended by the beaux of that period. The Diocletian baths were popular because of the marked beneficial influence on body disorders and general feeling of well-being. Frequent references to the use of thermal baths have been noted among the African and Indian tribes, the Egyptians, Jews and the Chinese. During the sixteenth century the volcanic baths of Kusatu in Japan were extensively utilized for treatment of syphilis and arthritis. The Japanese medical records report rapid disappearance of early luetic lesions under influence of hydrotherapy. Caricatures of French medicine portray large earthen ovens into which the heads of patients were inserted for the treatment of insanity, and where relief of symptoms was noted, a probable paresis was the organic basis of the disorder. Due to the influence of Virchow in the latter half of the nineteenth century, medical opinion was led to believe that elevated body temperature was distinctly harmful, and an era of antipyresis was instituted. The value of fever remained in eclipse until the epochal work of Julius Wagner-Jauregg[1] in 1918, when he demonstrated the beneficial effects of artificially induced malarial fever in syphilis of the central nervous system.

Our primary interest being centered in physical therapeutic measures, we shall follow the different physical modalities in their application to artificial fever therapy. As early as 1883, Philips advocated the use of hot baths in the treatment of disease. In 1927 Shamberg[2] and two years later Mehrtens and Pouppirt[3] demonstrated the use of prolonged hot baths in thermo-therapy. In rapid succession followed the work of Whitney[4] in radiothermy, Rosanoff[5] with hot air, Neymann and Osborne[6] with high frequency diathermy current, and heated and humidified cabinets as described by Simpson, Kislig and Sittler[7] and Berris[8] in 1933. With the way being paved for the utilization of the safest and most convenient method for the administration of artificial fever therapy, the development of physical modalities has been rapid. The uncertainty of control in body reactions due to chemical or infectious artificially induced fever has made the utilization of physical methods a necessity.

Methods of Elevating Body Temperatures

We have at our disposal four definite methods of administering artificial fever therapy. Advantages and disadvantages are inherent in both methods, but the experience of the past twenty years indicates the value of physical modalities. In our hands the heated and humidified cabinet is the simplest and safest method.

Chemical Method: This method has been particularly used by foreign workers, the material most frequently employed being sulphur.

Foreign protein method: The most frequently used substances are typhoid-paratyphoid vaccine, hemophilus ducrey vaccine, milk and peptone.

Infectious Methods: Since Wagner-Jauregg's work, malaria has been most frequently employed. Less commonly used are rat-bite and relapsing fevers.

Physical Methods: The various physical methods employed are hot air, prolonged hot baths, radiothermy, diathermy, short wave diathermy, electromagnetic induc-

10 Peterboro Street, Detroit, Michigan.
Address delivered at North End Clinic, Detroit, Michigan, Jan. 1936. From the Department of Fever Therapy, Grace Hospital, Detroit.

tion, blankets with hot water bottles or electric pads, and the heated and humidified cabinet.

PHYSIOLOGICAL PRINCIPLES INVOLVED

Neither time nor space permit a full discussion of all the physiological principles involved in the effect of artificial fever on the human body. A short discussion is presented in the following outline:

1. *Principles involved in the elevation of body temperature.* The discussion will be limited to the mechanism of fever induction by means of the heated and humidified cabinet. The patient is placed in an environmental temperature of 130-150° F. with a relative humidity of thirty-five to fifty-five percent. Due to the inability of the body to accomplish any heat loss by evaporation or radiation, the resultant vascular bed dilatation carries surface heat throughout the body. That the body temperature is universally raised has been proved by thermocouple records from electrodes placed in various organs.

2. *How fever produces beneficial results.* The beneficial results from artificial fever therapy, even though no actual biochemical action ensues, can be best understood from the following:

(a) *Destructive action*—Experimental work in syphilitic and gonorrheal infections has demonstrated the lethal effects of temperatures of 105.8-107° F. on the spirochete pallida and neisseria gonorrheae. Shamberg and Rule[9] working with rabbits showed that the spirochete could be inhibited from growing or be destroyed after temporary growth by immersing the animal's pelvis in water baths of varying temperatures. Spirochetes were seen to lose their motility and disintegrate after water bath temperatures of 106° F. for six hours. Neymann and Osborne, and Bessemans and Thiry[10] proved conclusively that spirochetes became immobile and disappeared from the lesions of human syphilis, and the lesions themselves healed rapidly. Carpenter, Boak, Mucci and Warren[11] demonstrated by in vitro experiments that 99.7 percent of the organisms were killed by a ten hour exposure at 104° F. Ninety-nine percent were destroyed in four to five hours at 105.8° F. Apparently one percent of gonococcic strains remain viable for five to twenty hours at temperatures above 105.8° F. These results have been corroborated by Simpson and the Mayo Clinic workers.

(b) *Stimulates immunologic responses*—This is suggested by the rapidity which gonorrheal infections insufficiently treated with artificial fever clear up under local treatment. More recently the reports of favorable results in the treatment of undulant fever with artificial fever by Prickman and Popp[12] in which the termination of the infection was noted several weeks after treatment seems to indicate such a response.

(c) *Stimulates metabolism*—The marked increase in appetite, weight and physical well-being that accompanies artificial fever treatment in neurosyphilis is definitely due to a stimulated metabolism.

INDICATIONS FOR FEVER THERAPY

Our experience with five years of artificial fever therapy with the heated and humidified cabinet indicate that the following diseases respond most satisfactorily. Gonorrhea and its complications, such as prostatitis, seminal vesiculitis, epididymitis, arthritis, and ophthalmia; resistant early syphilis and all forms of late syphilis combined with chemotherapy; intractable bronchial asthma; chorea minor; most recently undulant fever.

CONTRA-INDICATION FOR FEVER THERAPY

We believe that the selection of patients for fever therapy should be even more stringent than in selective surgical procedures. The following conditions should be considered as a bar to treatment: cardiac enlargement, cardiac weakness, hypertension or marked hypotension, aortic aneurism, electrocardiographic or clinical evidence of myocardial damage, renal disease, old age with few exceptions, general debility, emotional instability, and far advanced neurosyphilis with deterioration.

METHOD

The patient is acquainted with the details of the treatment, particularly the possible facial herpes, weakness, and possible nausea and vomiting. No measures are advocated until the morning of treatment when breakfast is omitted. One and one-half grains of sodium pentobarbital or sodium propyl-methyl-carbinyl allyl barbiturate are given orally. The patient is completely disrobed and the lower extremities are encased in flannel stockings. The body is placed in a pre-heated cabinet previously described[8] with the head protruding into the open air through a canvas opening. Body temperature is permitted to elevate at a rate approximately one degree every fifteen minutes, but the desired temperatures are usually attained in sixty to ninety minutes. Rectal temperature readings, pulse, respirations and blood pressures are recorded four times each hour. When the temperature reaches 102° F., one-third grain of pantopon is administered hypodermically. Due to excessive perspiration the patients are encouraged to drink iced saline, the usual intake during treatment being from two to five quarts. Because we tend to maintain the fluid balance of the body, the majority of the patients suffer no weight loss. For further comfort an ice cap is placed on the patient's head and a fan is permitted to circulate air. Most important in artificial fever therapy is the fever therapist, for to her is intrusted the control of body temperatures within a few tenths of a degree. Mechanical devices for recording rectal or oral temperature have proved unsatisfactory and even dangerous, and in so heroic a measure as fever therapy we utilize temperatures close to the lethal level. When areas of erythema appear on the skin usually near bony prominences, (the patient usually notices a subjective sensation of burning over this area and will call the fever therapist's attention), cold moist cloths alleviate the condition. Upon completion of treatment the stretcher is partially withdrawn from the cabinet and the patient is permitted to cool. When normal temperature is attained, the patient takes a shower bath followed by an alcohol rub. Patients not too fatigued by the ordeal may return to their homes after several hours of bed rest.

The usual complications that we have noted have been headache, facial herpes, and nausea and vomiting during treatment, usually due to too much fluid in the stomach. To a lesser extent we have noticed carpopedal spasm or abdominal muscular spasm, general erythema, mild burns and impending cardio-vascular collapse (as indicated by a pulse above 160 per minute). Facial herpes responds best to witch-hazel compresses and menthol ice. Nausea and vomiting, when distressing, is readily relieved by an intravenous injection of five percent glucose in normal saline, and this may be administered during treatment. Headache usually fails

to respond to any form of therapy and is self-limited. Tetany can be relieved immediately by the intravenous injection of ten cubic centimeters of ten percent calcium gluconate. If the pulse tends to remain at 160 beats per minute for more than thirty minutes, treatment should be discontinued. Any pulse rate above 160 beats is a sign for immediate cessation of treatment. The first fever session should be considered as a test of the patient's tolerance and an indication to the fever therapist what to expect in the way of the former's thermolability. At no time in our experience have we observed any terrifying states of dyspnea or delirium. We feel that an adequately trained personnel under competent medical supervision is most important for successful treatment. Regardless of the physical modality employed, the competency of the team decides the safety and efficacy of the method.

Treatment of Gonorrhea and Its Complications

The most dramatic and spectacular results with artificial fever therapy have been achieved in the treatment of gonococcic infections. Treatment consists of six continuous hours of rectal temperature of 106-107° F., being repeated every three to five days depending on the tolerance and general condition of the patient. Our criteria of cure are: Complete disappearance of organisms and discharge, normal palpatory findings on examination of the prostate and adnexae, no shreds in the urine, complete disappearance of lower quadrant pain and tenderness. The following one hundred cases of gonorrhea are summarized:

Acute anterior urethritis—eight cases, six cures, 3.2 treatments per patient. One patient failed to return after one treatment; one patient showed no response after three treatments.

Acute posterior urethritis—three cases. Three cures with average of three treatments. Complete cessation of perineal pain and systemic reaction noted following the first treatment.

Acute epididymitis—five cases. Average of two treatments with four cures. One patient refused to cooperate and the first treatment was discontinued after three hours. Complete subsidence of pain and fifty to seventy-five percent decrease of swelling occurred after the first treatment.

Prostatitis—seventeen cases. Acute, sub-acute and chronic infections are included. Average of 4.2 treatments with ten cures and six greatly improved (persistance of occasional morning drop though negative for gonococci). One case failed to show any response. One patient with hay fever had a complete cessation of all allergic manifestations. Three cases with arthritis were completely cured.

Pelvic inflammatory disease—twenty-seven cases. Acute, sub-acute and chronic infections are included. When marked systemic reaction was present (septic temperature and prostration) with marked abdominal pain and vaginal discharge, a very dramatic response was obtained. Eighty percent of the patients showed an almost complete subsidence of all symptoms with one fever session. This response is so marked that we feel a trial test of fever in all doubtful cases of pelvic inflammatory disease will establish the nature of the etiological agent. Average number of treatments in this series 4.5, with twenty-two cures. The remaining five cases refused further treatment. In two of those refusing treatment, local heating with the Elliott machine and short wave diathermy after one fever session resulted in accelerated response.

Gonorrheal arthritis—forty cases. Thirty cases complete cures, as indicated by complete subsidence of pain, swelling, and disability. Eighty-five percent of cases presented polyarticular manifestations associated with periarticular pain and swelling though roentgen evidence for bone destruction was absent. Four cases with roentgen evidence of bone destruction showed marked improvement, requiring short wave diathermy and massage for two months before a good return of function was noted. In almost all instances a marked relief of pain was noted after the first fever session. Three cases failed to make a definite response, and in each instance negative smears with indefinite histories of infection were obtained.

Summary

Artificial fever therapy is one of the five greatest therapeutic advances during the past decade. Artificial fever therapy is accomplished by means of the heated and humidified cabinet. Minor complications are headache, nausea and vomiting, facial herpes, erythema and mild burns. Contra-indications are cardio-vascular-renal abnormalities and old age. Gonococcic infections respond dramatically to artificial fever therapy.

Bibliography

1. Wagner-Jauregg, J.: Psychiat. Neurol. Wchnschr., 20:132, 1918.

2. Schamberg, J. F., and Tseng, H. W.: Experiments on the Therapeutic Value of Hot Baths; Physiologic Observations, Am. J. Syph. 11:337 (July) 1927.

3. Mehrtens, H. G., and Pouppirt, P. S.: Hyperpyrexia Produced by Baths, Arch. Neurol. and Psychiat. 22:700 (Oct.) 1929.

4. Whitney, W. R.: Radiothermy, Gen. Elect. Rev. 35:410 (Aug.) 1932.

5. Rosanoff, A. J.: A Simple Thermotherapeutic Technic, Am. J. Psychiat. 7:489 (Nov.) 1927.

6. Neymann, C. A., and Osborne, S. L.: Artificial Fever Produced by High Frequency Currents, Ill. M. J. 56:199 (Sept.) 1929.

7. Simpson, W. M., Kislig, F. K., and Sittler, E. C.: Ultra High Frequency Pyretotherapy of Neurosyphilis, Ann. Int. Med. 7:64 (July) 1933.

8. Berris, J. M.: The Treatment of Arthritis by Artificial Fever, J. Mich. State Med. Soc. 32:355 (June) 1933.

9. Schamberg, J. F., and Rule, Anna M.: Arch. Derm. & Syph. 14:3243, 1926.

10. Neymann, C. A., Lawless, T. K., and Osborne, S. L.: The Treatment of Early Syphilis with Electropyrexia, J. A. M. A. 107:194 (July) 1936. Bessemans, A., and Thiry, U.: Bruxelles-Med. 13:299 (Jan.) 1933.

11. Carpenter, C. M., Boak, R. A., Mucci, L. A., and Warren, S. L.: J. Lab. & Clin. Med. 18:981, 1933.

12. Prickman, L. E., and Popp, W. C.: Proc. Staff Mayo Clin. 11:506 (Aug.) 1936.

Conservative Treatment for Moderate Scoliosis in the Adolescent

Lucille Daniels and Carolyn McDermott

Corrective exercises are a paramount factor in the treatment of moderate scoliosis of the adolescent. In an age when most people are leaning toward a radical treatment we have found that conservative treatment gives unusually good results. Of the forty-three cases treated and studied only three needed casts or a fusion. The age range was from eleven to eighteen years and the treatment was from two to twenty-nine months.

In making this study, four clinical observations have been made that we believe are significant.

First, fundamental posture work is a basic principle in prescribing exercises in this group, and it is essential in treating both functional and structural types of curves. Associated antero-posterior postural defects, such as dorsum rotundum with round shoulders and lordosis, should be corrected, as their effect on the lateral curve is usually marked. In the three-quarter view of the back, in Figs. 1 and 2, is seen the decrease in lordosis itself, and Figs. 3 and 4 illustrate the effect this decrease combined with the corrective exercises, has had on the lateral curve.

Second, emphasis should be placed upon exercises that correct rather than over-correct the lateral curve. Exercises solely for the purpose of overcorrection should be avoided. For example, any strenuous sidebending is of no value; in fact, it may be detrimental later in increasing the lateral curve by bringing flexibility to the spine without creating the power to hold the body in a corrected position.

Third, passive stretching has little application in these cases—its place being rather as a preparation for spinal fusion. By passive stretching we mean head suspension by means of a sling, other apparatus for stretching or stretching by the technician. If you have a head sling and feel you must use it, it may be of some value only if combined with active exercises. To illustrate, have the patient stretch as tall as possible. Give the patient a slight lift with the head sling, then have him actively contract the muscles and hold the position while walking. Eliminate the time element in using head slings and other apparatus.

Fourth, muscle setting is important. This is the active contraction of muscles without completing the range of motion. By this method it is easier to isolate and educate individual muscles, thereby minimizing muscular deficiency and muscle imbalance. We have used this method in treating muscles of the extremities such as the quadriceps, tibials, and others with much success, but its value in the treatment of the spine has been under-estimated. The rhomboids, lateral and anterior abdominals are groups which lend themselves well to muscle setting. It must be kept in mind in employing this type of exercise that in order to get maximum results, it is necessary to give the muscle resistance by relaxing its antagonist slowly.

1220 N. State Street, Chicago, Ill.

In summarizing these observations a correlation can be made between the treatment of extremities weakened by infantile paralysis and the treatment of moderate scoliosis caused by muscular insufficiency. In both we find an imbalance of muscles with the pull in the direction of the strong muscles. The weaker muscles in each case must be isolated and strengthened by active exercise and muscle setting. If the weaker muscle can be strengthened enough to minimize the pull of the stronger muscle, no deformity results. In the treatment of both the trunk and extremities, muscle re-education must be the underlying principle. The initial treatments in scoliosis should serve as a muscle examination to determine whether or not it is a type of curve that will lend itself to conservative treatment. A curve that will not respond to moderate technique will make itself known in the first six weeks of treatment.

Emphasis must be placed on the patients' exercises at home, as the hour or so of treatment in the office or gymnasium is not the all important one. Cooperation between patient and parent is significant.

The illustrations included are typical cases taken from our files in which these principles have been incorporated. In examining these photographs there are a number of things to be taken into consideration. Listed briefly these are:

Posterior view standing.

1. General contour.
2. Physiological antero-posterior curves.
3. Level of shoulders.
4. Level of scapulae.
5. Ilio-costal angles.
6. Level of iliac crests.
7. Symmetry.
8. Level of gluteal creases.
9. Rhomboid of Michaelis.
10. Displacement of trunk beyond median line.

Case A—S. G.—Left thoracic lumbar scoliosis. This patient was treated for two months with definite improvement. At the end of that time she complained of pain in her back. A Hoke corset was prescribed for support. She continued with exercises and had worn the corset for four months when the last two photographs were made (Figs. 2 and 4). Note displacement of trunk, level of shoulders, and position of scapulae. She is still under treatment.

Case B—R. D.—Age 15 years. (Figs. 5 and 6.) Left C. Curve. No history of disease. Exercises were given once a week for twelve months.

Case C—R. B.—Age 15 years. (Figs. 7 and 8.) Right thoracic, left lumbar curve. She had exercises

Fig. 1—Case A. Three-quarter view, showing lordosis, round shoulders and rotation.

Fig. 2—Case A. Three-quarter view after six months treatment, showing correction of lordosis and improved position of shoulder girdle.

Fig. 3—Case A. Posterior standing position.

Fig. 4—Case A.

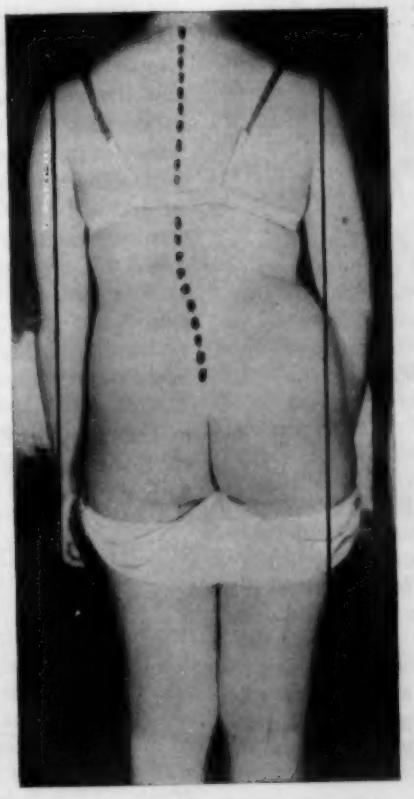

Fig. 5—Case B. Posterior standing position.

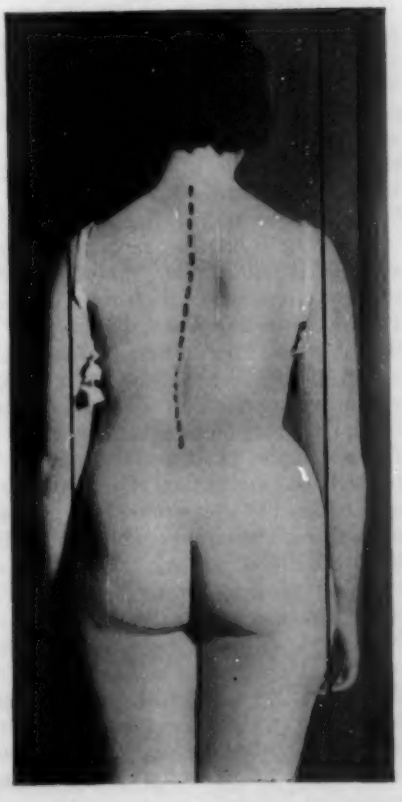

Fig. 6—Case B.

for eight months before coming to our office with some improvement. First photograph was taken at the time of her initial visit. Second photograph was taken after one treatment a week for twelve months. Note outline of spinous processes, level of shoulders and iliocostal angles.

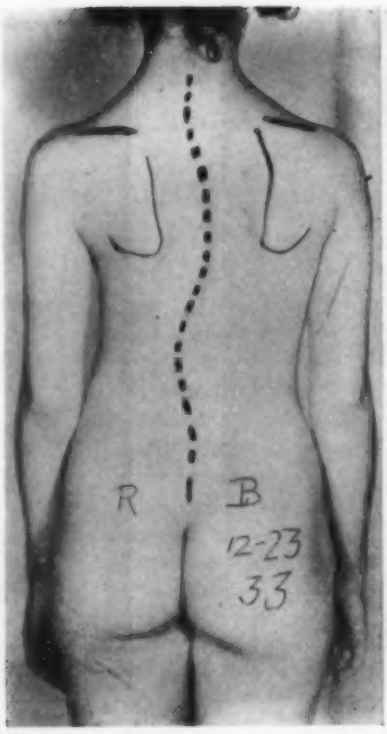

Fig. 7—Case C.

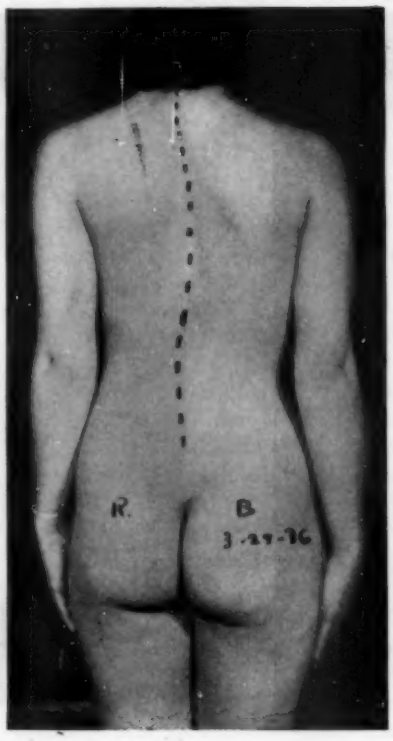

Fig. 8—Case C.

The results obtained have been both satisfying and gratifying. It is the hope of the writers that the observations may be of some value to you in your treatment and may encourage those who are interested in conservative treatment of scoliosis.

The 15th and 16th centuries witnessed the Renaissance of thermalism, as can be seen in the travels of Montaigne, Erasmus, and in the account of the cure of the Duke of Maine at Bareges in the following century. The works of *Jean Banc* and of the *Sire de la Framboisière* can be referred to. *De Lorme* sent Madame de Sevigné and Madame de Montespan to Vichy and Bourbon, while the court of the king visited Forges-les-Eaux. *Duclos*, in 1670, presented to the Faculty the first analysis of "The Waters of the Kingdom."

In the following century *Secondat de Montesquieu*, son of the philosopher, made an analysis of the waters of the Pyrenees which is for its period a model of its sort. Finally came the *Bordeu family*, of whom the most celebrated was Théophile de Bordeu, called the greatest physician of the 18th century. In their *Journal de Bareges*, which was carried on for almost fifty years, we find codified all the medicothermal customs of French centuries. Physician and philosopher, anatomist, psychiatrist, therapeutist and historian, Théophile de Bordeu has passed on to us his researches on chronic diseases and his memoir on the tissues which is said to have considerably inspired Bichat's work. Under this stimulus, hydrology took its position in medicine, and the king named his first physician Inspector General of the Waters of the Kingdom. The inspectors, the need for whom was recognized by Henri IV, in spite of the struggles which their privileged stations brought about, rendered an immense service to the cause of hydrology. A few years before the Revolution, *Carrère* published that unique monument to hydrology "Catalogue raisonné des eaux minerales."

The first half of the 19th century is full of the reports of the inspector generals. The Empire brought our thermal stations to an unheard of prosperity. New roads were laid out, and new establishments opened. The Emperor and Empress patronized Saint-Sauveur, Vichy and Biarritz. *Le Bret, Lefort* and *Durand-Fardel* published their dictionary while the great *Garrigou*, at Toulouse, inaugurated at his own expense the first laboratory of hydrology and the first systematic teaching of the subject. In 1899, *Carron de la Carrière* had an idea of creating medical excursions to mineral springs on the model of pilgrimages. The medical genius of *Landouzy* at once grasped the didactic, therapeutic and social possibilities of such a project. *The Voyages aux Eaux Minerales* (V. E. M.) were created and every year since then have visited the climatic and thermal stations of France. Their value has been such that they have been imitated in Germany, Italy and Spain, and in France the Medical Society of the Mediterranean complements the scheme with excursions to the Cote d'Azur, the Pyrenees and the Alps. Little by little a hydrologic doctrine has been evolved. A lively campaign for the creation of chairs of hydrology has arisen, the first being created at Bordeaux in 1912 with Professor *Sellier* as the holder. Since then gradually all our Faculties have acquired chairs. The Institute of Hydrology has collaborated with the clinic and the laboratory, and finally thermal hospitals and societies have been organized. French hydrology, through its wise legislation, teaching and achievements, is recognized as a model by other countries.—*From "FRENCH MEDICINE," by M. Laignel-Lavastine and M. Raymond Molinery.*

Residual Neuromuscular Hypertension: Implication for Physiotherapy*

Part III: Residual Neuromuscular Hypertonus Causes and Conditions

Josephine L. Rathbone, Ph.D.

The specific physiologic state which is to be considered in the following articles in this series is that hypertonus or hypertension of nervous and muscular tissue which remains after need for it has passed. Hypertonus is to be considered as some degree of increase in the normal tonus present in all work—physical and mental.

Just as normal fatigue was defined, in a previous article, as that decrease in work efficiency which can be relieved by rest, so normal tonus or tension, because it is part of normal fatigue, can be defined as that degree of tonus which can be relieved by rest. When the rhythm of contraction and relaxation—of tension and release of tension—is arrested; when the organism stays at a high peak of tension and does not or cannot relax, then it may be said to be in residual hypertonus or hypertension. Jacobson calls this hypertension *the residual contraction of fatigue.*

Hypertension in a single muscle. Hypertonus in a single muscle has been studied in laboratories through experiments on the variation in the knee jerk secondary to alterations in tonus of the quadriceps femoris muscle. It has been found to depend upon many factors, especially upon the body's preceding general state of muscular tonus.[1] Whatever increases or decreases the body tonus, increases or decreases the extent of the knee jerk accordingly.[2] Jacobson says that there is an increase of the jerk during all acts which produce stimulation and all states of heightened muscular tonus.[3] In fact, all conditions that demand alertness and attention will increase the knee jerk.

One must not think that the quadriceps femoris is the only muscle to show states of increased or decreased tonus, or that the patellar reflex is the only measure of hypo- or hyper-tension. It just happens that the quadriceps is a convenient muscle to study because it is well weighted for contraction when the knee is bent and the lower leg is pendant, and because the distance of movement of the foot can be measured fairly accurately by quite crude mechanical methods. Now that electrical devices are available, any muscle which is normally employed for holding the body in readiness for movement or for attention can be used in experimentation. Jacobson has chosen to make his recent observations of degrees of neuromuscular hypertension in various states on the biceps brachii instead of on the quadriceps femoris, because it is more available and because the results are as satisfactory, at least, as any previous studies on the quadriceps.

Hypertension in the entire body. Just as all tension of skeletal muscles reacts on other skeletal muscles, of which the quadriceps femoris and biceps brachii are examples, tension of all skeletal muscles reacts on smooth muscle. In other words, fatigue poisons and reflex excitation are not confined to the muscles which move the body and which hold it still, but spread to other organs and react upon them.[4] There is an increased sensitiveness and consequent excessive activity of many organs and tissues, the ones affected in each case being determined by individual conditions. Whether the influence consists in a general stimulation or in the withdrawal of desirable inhibitions, the result is augmented activity.

Neuromuscular Hypertension in Neuroses and Psychoses. Those who are familiar with neurotic and psychotic patients are well aware of their tenseness at certain stages in their illness. Since "during neuroses . . . there is failure to relax,"[5] Jacobson suggests that tense muscles and high tonus of the neurons have important roles in nervous irritability. He adds that during fatigue or nervous states of all kinds there is to be observed the "presence of persistent or frequently recurring reflex and voluntary activities which evidently interfere with complete rest and so maintain the disordered states."[6] Even the hypochondriacal feelings of fatigue, which are so common in the neurotic individual, may be "the natural expressions of an emotionally irritated and exhausted nervous system."[7]

A large proportion of the individuals who become mentally sick and try to avoid reality by feelings of fatigue are the ones who have had too little rhythmic physical exercise and recreation[8] and too much mental excitement and worry. Furthermore, they may have tried to force themselves to greater endeavor after they had experienced the first signs of fatigue. In all our subjects we must look for signs of psychogenic as well as bioneurogenic fatigue with their resulting conflicts and tensions.

Neuromuscular Hypertension and Intellectual Work. In Part I of this series of articles, we left the discussion of the psychologist's interest in fatigue with the judgment that pure mental work does not apparently cause real fatigue. But what is pure mental work? As Golla has emphasized, "It is through our concentration on the cerebral aspect of mental activity that we have been so slow to realize that the body partakes in the movements that express this activity. . . . All that takes place in the surrounding world and in my own body,

Teachers College, Columbia University, New York City.

*Residual Neuromuscular Hypertension: Implications for Education, by Josephine L. Rathbone. Published by the author, New York City, 1936.

including my brain and nervous system, consists only of movements of different kinds and degrees. . . . The body, including the brain, is an instrument of movement and nothing else. . . . The nervous system has only physical properties, and has no other power than that of receiving, preserving, and continuing movement. Movement alone is sensible to us and movement can produce nothing but movement. . . . If the brain is ill, it is only movements and nothing else that are arrested. . . . The whole of psychology is a temporary stop-gap, by which we eke out our defective physiology, but which must sooner or later cease to be of use, and therefore cease to exist, as physiology advances."[9] Golla goes on to say that by movement he understands not only the manifest muscular reactions, but also secretory and circulatory responses; and that even the external and internal speech by which thought is expressed is only a mode of movement.[10]

The difficulty in measuring the amount of muscular activity that accompanies mental work probably is accounted for by the fact that the devices used in most physiology laboratories are too crude to detect the changes in tonic muscular contraction even when they are appreciable. But as Gasser said of contractures, "To argue that no lactic acid was there (during contracure instead of after) is like denying its production in a single twitch because it can not be chemically determined. Just as lactic acid is soon demonstrable in a series of twitches, it was soon demonstrable in their contractures,"[11] after they had become extreme. When physiologists use electrical and sound devices more generally to study changes in potential and waves of excitation in contracting muscles, they will be able to judge more accurately of degrees of muscular "work" during intellectual and emotional experiences.

Most of the muscular activity associated with mental work is of the tonic type and is exhibited in increased attention. Attention is definitely a muscular phenomenon. To use Mosso's words, "Physiologists think to explain these phenomena by saying that in the physiological process of attention there is an inhibition. There are, however, numerous evident indications that it is rather excitation which prevails. The very attitude of anyone who expectantly awaits a sound or a signal, the movements of his head and the expression of his face, show that attention is closely connected with motor phenomena. . . . In attention there are two distinct factors; the first consists in the reinforcement of the internal representation, the second in the prevention of any impressions from the outside world reaching consciousness."[12]

The most obvious muscular phenomena in attention are to be recognized in bodily attitudes and arrested movement. Very frequently, as Golla points out, when an intellectual effort is made there is a slight but definite forward posturing of the head which lasts for the duration of the effort. The bowed head observable in certain people when thinking deeply is obviously an exaggeration of this reflex.[13]

Golla goes on to show that the increases in tonus which states of attention affect are not localized in the head but are widespread in the body. He says, "Flattening of the respiratory curve is not to be attributed to a simple diminution of the respiratory movements; it is conditioned by the general increase in muscular tonus, affecting primarily the expiratory muscles, whilst expiration is obstructed by closure of the glottis."[14] Furthermore, Golla observes throughout the body an individualized habitual patterning quality of the tonus increase with effort.

Many of the cases observed in connection with this dissertation bear out the observations of Golla: that the head is held statically during attention, that respiratory movements are definitely impeded because of increased tonus of the diaphram and other muscles of respiration, and that every individual seems to develop definite patterns of tonic contraction with all his efforts. It is the simple fact that mental fatigue is slight, or never leaves the stage of neuromuscular hyperexcitability for the stage of exhaustion that makes it so disastrous. Furthermore, mental processes seem to be always a process of striving. Therefore, they goad the body on to endeavor far beyond its strength.

Relation of Neuromuscular Hypertension to Insomnia—Nature of Sleep. Although we can answer with a comparative amount of confidence the question, "Why do we rest?" it is impossible to give an absolute answer to the question, "Why do we sleep?" Sleep may be mainly a habit,[15] or a conditioned response, for it often occurs in the absence of demonstrable bodily need. The most important function of sleep may be a release from "binding and unprofitable habits of thought and conduct . . . The breaking up of brain patterns, the erasure of marks from the slate, the obliteration of 'ruts' which are threatening to wear to an undue depth;"[16] or sleep may be an essential factor in the recuperation from physical work. While one function of sleep may be psychogenic, another may be bioneurogenic.

As late as 1930, von Economo reviewed the theories of sleep proposed to date and failed to offer an indisputable hypothesis as to its cause. He discarded the anemia of the brain theory of Mosso and the specific hypno-toxic theory of Pieron;[17] and substituted the theory that there is a center for regulation of sleep in the immediate vicinity of the other important vegetative centers located in the infundibular region of the brain, which center may be set in action by fatigue substances.[18] His hypothesis seems incomplete since sleep can be produced without "fatigue."

Kleitman has presented the following theory of sleep: "1. Sleep is an easily reversible inactivity of the highest functional centers of the cerebral cortex. 2. The activity is due to a functional break between the cerebral cortex and the other parts of the nervous system. 3. The functional break results from a marked decrease in the number of afferent impulses from the sensorium, especially proprioceptive impulses which depend upon the degree of muscle tonus maintained. 4. Sleep is due to fatigue of the neuromuscular mechanism concerned in the maintenance of muscle tonus. 5. In the absence of such fatigue, sleep may result from complete muscular relaxation, intentional or unintentional. 6. Diurnal alternation of wakefulness and sleep is a 'conditioned' phenomenon."[19]

Kleitman's last point aims to explain that nightly sleep which may be experienced without any great physiologic demand; and his theory even accounts for the sleep which may result when the body is still tensed. Muscular inactivity during sleep is relative. Many individuals are muscularly so tense that their bodies cannot relax very far during the diurnal sleep which nature requests, but even they must experience a "decrease in the number of afferent impulses from the sensorium" in order to "fall asleep."

Nature of Insomnia. Whether sleep has been satisfactorily explained or not, insomnia has been given an

accurate interpretation. It depends upon the person's being muscularly active.[20] In states of insomnia, the body has to be in some degree of muscular tension, and, in sleeplessness tests, persons must be kept muscularly active and making an effort in test performances.

It is not the rhythmic type of exercise, which quickly causes physiologic exhaustion, that induces insomnia, but the marked degrees of tonus which accompanies mental work and worry—the tonus that goes with attention and held positions. "It is a curious fact that the more tired one is mentally the harder it is to get to sleep."[12] Especially when through overwork the muscles have become tense and the brain extremely active it will take some time before the "wheels will run down."[22] Furthermore, nervous overactivity during the day, as a result of over-addiction to business, social and intellectual pursuits, "may persist at night in the form of restless and broken sleep,"[23] and mental states of excitement, anxiety, and worry may postpone the onset of sleep.[24]

On the other hand, insomnia from any cause increases mental as well as muscular excitability to a high level. The first effects of fatigue through loss of sleep, as well as overactivity, are stimulation of the mental powers and emotional instability, as well as muscular hypertension. It has been demonstrated repeatedly that actual mental efficiency is not reduced after many hours of experimental insomnia, due possibly to interest in the experiment or to increased effort,[25] or to the normal phase of hyperexcitability in the fatigue syndrome. Instead, it is usually increased until an inability to fix the attention develops, and the individual becomes peevish and irritable.

With continued loss of sleep, the pulse rate[26] as well as the blood pressure becomes reduced; while fundamental pathologic changes are manifested by decrease in red blood cells and haemoglobin and an increase in white blood cells.[27] Furthermore, from continued loss of sleep as well as from fatigue of other origin, the body temperature drops gently.[28] After the third day of an experiment on the bodily reactions to sleep loss, Renshaw reports that a room temperature of 80° Fahrenheit was required for comfort.[29] These circulatory and vasomotor reactions are to be associated with pathologic hypertonus.

Sensations of Neuromuscular Hypertension. "Insomnia is always accompanied by a sense of residual tension and can always be overcome when one successfully ceases to contract the parts in this slight measure."[30] In all insomnia it is possible for the sufferer to recognize a definite degree of tension in some muscles. This sensation of tension may even be present in the morning upon waking and may indicate to the individual that he has not been relaxed even in his sleep, as is quite possible.

The sensation accompanying neuromuscular hypertension is definitely unpleasant, after it has persisted for long. What factors are responsible for the increased sensory phenomena are not quite clear. Perhaps it is due to increased stimulation of the proprioceptive nerve endings in the muscle sheaths. Perhaps it is due to restrictions in circulation. At any rate, the sensation is dull and suggests inertia, stiffness, or pressure from weight.

Fatigue, like other sensations affecting our nerves, does not arrive at a state of consciousness until it has reached a certain degree of intensity.[31] Therefore it seems important to pay attention to its very first signs—feelings of tenseness in the muscles,—and to try to relax the muscles sufficiently to do away with these sensations. Perhaps they are the fateful warnings of the headaches, restlessness, nervousness, irritability, and passionate outbreaks which are the final symptoms of undue fatigue.

We should attend to all the comments our patients make about sleeplessness and about sensations of tension, because by these tokens they show that in some measure they are hyperexcitable and should be obeying the warning nature is giving them. Probably the kind of fatigue which many psychologists have dismissed as being false, and noninjurious to the body, is just as much fatigue as the type which the college oarsman experiences and should be given as much protective care.

Relationship of Neuromuscular to Arterial Hypertension. Essential arterial hypertension, as defined in the 1930 Year Book of General Medicine, is "a progressive disease probably beginning in the second and third decades of life and ending usually after the third decade, by cardiac failure, cerebral accidents or renal insufficiency."[32]

If essential arterial hypertension is so disastrous, it would seem important to consider its earliest forms, when therapeutic measures might be effective. Although the reason for the extraordinary prevalence of degenerative diseases of the heart may be obscure, it is clear that one important contributing factor is the stress and strain of living and working. Arterial hypertension does not "probably" begin in the second and third decade, but actually begins any time the body becomes hypertense for any cause whatsoever. It would seem wise to attack the neuromuscular hypertension which later may lead to permanent arterial hypertension,

In treating cases with arterial hypertension, "it is necessary to rearrange the life of the patient in such a manner that he may learn to relax."[33] But these changes, to be effective, must be initiated before there occurs any fibrosis in the heart. "Logical therapy demands that both the initiative and the perpetuative etiological factors receive attention. As the circle is maintained through continuous arteriolar spasticity, interruption and relaxation of such spasticity should logically break the vicious cycle. Such relaxation must persist for some time, however, before the element of fatigue is removed."[34]

Neuromuscular Hypertension in Neurologic Lesions. Although a detailed description of the consequences of neurologic pathologies is inappropriate in this study, it is necessary to mention certain conditions which cause marked hypertension of the neuromuscular system.

Lesions in the upper neurons of the nervous system, caused by birth injuries or by faulty development of those centers, are not uncommon. Although no such cases have been included in this study, many cases so involved are referred to clinics of corrective physical education for directed muscle training.

Injury to the cortico-spinal tracts, which are transmitting impulses from the cerebral cortex to the striated muscles, results in spasticity of the striated muscles to which the specific nerve fibers are leading. Injury to the rubro-spinal tracts, which are transmitting impulses from the mid-brain and are concerned with involuntary coordination of striated muscles, results in a lack of coordination of the muscles involved. Both conditions show in excessive neuromuscular tension. Most important psychological problems are involved in such cases, also. The emotional instability induced by the fatigue from which all "spastic" individuals suffer, their awareness that they are attracting undue and unflattering attention to themselves, and their unfair mental rating, in some instances (because the play, social outlets and schooling which serve to educate normal individuals are

denied to them), all tend to increase their residual neuromuscular tensions.

Since, until very recently, few institutions have been equipped with facilities or personnel for successfully handling the development of the birth injured or prenatally injured, the tasks of adjusting a disorganized muscular control in these cases and of directing their emotional development have been ill performed.

Neurologic lesions may develop after birth. Encephalitis and cerebral hemorrhage are not uncommon; and their treatment is more difficult and discouraging, muscularly, than that for so-called "birth injured" cases. Other types of neurologic lesions suggest the desirability of re-education muscularly, and such cases are frequently sent to corrective physical education clinics. Such cases have been carefully segregated from the group included in the study reported in this series of articles.

BIBLIOGRAPHY

1. Jacobson, Edmund: Response to a Sudden Unexpected Stimulus, Jour. of Experimental Psychology, 9:1:19-25 (February) 1926.

2. Tuttle, W. W., and Williams, Emily: The Effect of Autocondensation and High Frequency Electric Current on the Tonus of Skeletal Muscle, Amer. Jour. of Physiology, 74:3:650-655 (November) 1925, p. 650.

3. Jacobson, Edmund: Progressive Relaxation, The University of Chicago Press, Chicago, 1929, p. 288.

4. Ibid. 16 ff.

5. Ibid. xi.

6. Ibid. p. 11.

7. Smith, L. H.: Mental Fatigue, Hygeia, 7:7:682-683 (July) 1929.

8. Henry, George W.: Essentials of Psychiatry, The Williams and Wilkins Co., Baltimore, Md., 1928, p. 113.

9. Golla, Frederick L.: Croonian Lectures on the Objective Study of Neurosis, The Lancet, 1921, p. 115.

10. Ibid. p. 116.

11. Gasser, Herbert S.: Contractures of Skeletal Muscle, Physiological Reviews, 10:1:35-109 (January) 1930, p. 71.

12. Mosso, A.: Fatigue, G. P. Putnam's Sons, New York, 1904, pp. 191-192.

13. Golla, Frederick L.: Op. cit, p. 120.

14. Ibid. p. 121.

15. Franz, S. I.: Nervous and Mental Re-education, The Macmillan Co., New York, 1933, p. 10.

16. Stiles, Percy G.: Sleep and Its Disorders, Nelson's Loose Leaf Medicine, 6:40:709-714, 1920, p. 712.

17. von Economo, C.: Sleep as a Problem of Localization, The Jour. of Nervous and Mental Disease, 71:3:249-259 (March) 1930, p. 251.

18. Ibid. p. 255.

19. Kleitman, Nathaniel: Sleep, Physiological Reviews, 9:4:624-665 (October) 1929, pp. 654-655.

20. Ibid. p. 635.

21. Alvarez, W. C.: Nervous Indigestion, Paul B. Hoeber, Inc., New York, 1930, p. 177.

22. Ibid. p. 177.

23. Renshaw, Samuel; Miller, Vernon L.; and Marquis, Dorothy P.: Children's Sleep, The Macmillan Co., New York, 1935, p. 20.

24. Collins, J.: Insomnia: How to Combat It, D. Appleton & Co., New York, 1930, vi and 131 p.

25. Robinson, Edward S.; and Herman, Samuel O.: Effects of Loss of Sleep (I), Jour. Experimental Psychology, 5:1:19-32 (February) 1922.

26. Weiskotten, Thomas Fister: On the Effects of the Loss of Sleep, Jour. of Experimental Psychology, 8:5:363-380, 1925, p. 380.

27. Moss, F. A.: Eyes and Ears Dulled by Lack of Sleep, Hygeia, 4:1:62 (January) 1926.

28. Weiskotten, T. F.: Op. cit. p. 380.

29. Renshaw, Samuel: Children's Sleep. Op. cit. p. 164.

30. Jacobson, Edmund: Progressive Relaxation. Op. cit. p. 29.

31. Readett, Mary A.: Fatigue in an Outdoor School, Hygeia, 9:12:1144 (December) 1931.

32. General Medicine: The Practical Medical Series, The Year Book Publishers, Chicago, Series 1930, p. 557.

33. Weiss, Soma; and Ellis, Laurence B.: The Rational Treatment of Arterial Hypertension, Jour. A. M. A., 95:12:846-852 (September 20) 1930, p. 849.

34. Steiglitz, E. J.: Bismuth Subnitrate in the Treatment of Arterial Hypertension, Jour. A. M. A., 95:12:842-846 (September 20) 1930, p. 843.

(Editor's Note: This is the third of a series of articles by Miss Rathbone. The next will appear in an early issue.)

*Pasteur's Counsel to the Young Physician**

"Whatever your career may be, do not let yourselves become tainted by a deprecating and barren scepticism, do not let yourselves be discouraged by the sadness of certain hours which pass over nations. Live in the serene peace of laboratories and libraries. Say to yourselves first: 'What have I done for my instruction?' and, as you gradually advance, 'What have I done for my country?' until the time comes when you may have the immense happiness of thinking that you have contributed in some way to the progress and to the good of humanity. But, whether our efforts are or not favoured by life, let us be able to say, when we come near the great goal, 'I have done what I could.'"

Joseph Lister (1827-1912) was present representing the Royal Societies of London and Edinburgh. In his tribute to Pasteur, he said,

"You have raised the veil which for centuries had covered infectious diseases; you have discovered and demonstrated their microbian nature."

*Excerpts from the response made by Louis Pasteur (1822-1895) on the occasion of the celebration of his seventieth birthday. The exercises were held December 27, 1892, in the theatre of the Sorbonne.
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American Physiotherapy Association Exhibit*

Improvised Home Apparatus for the After-care of Poliomyelitis

Our booth, No. 619, was located among the educational exhibits, directly across from the booth of the Council on Physical Therapy of the American Medical Association, and adjoined the booth of the American Occupational Therapy Association.

The subject of the miniature exhibit was "Teaching the Care of Poliomyelitis in the Home." This sign was posted on the wall space immediately above the miniature model. The model showed a kitchen and bedroom of a low income home. An exercise tank and kitchen table set up for massage were shown in the kitchen. A small doll represented the public health nurse physical therapy technician teaching the mother. The bed, a portable table cart for daytime use, and other apparatus were shown in the bedroom.

The wall space was used to exhibit six large posters with enlarged pictures of other types of improvised apparatus.

On the ledge were displayed home-made splints for arms, legs, hand, neck, corsets, etc.

The kitchen table was used to demonstrate the making of splints.

The interest expressed in the exhibit by doctors and others was indeed gratifying.

In addition to the many doctors who are already familiar with our work, some of our other visitors were health officers from many states, doctors from rural communities, and medical students. Some of the countries represented were: Canada, Australia, China, India, the Philippines, and Central America. Dr. Hood, of the Children's Bureau, Crippled Children's Division, and Dr. Leake, of the United States Public Health Service, were most enthusiastic in feeling that the exhibit was practical and helpful.

One hundred reprints of Miss Davis' article on "The Making of Splints," which appeared in the November-December 1936 issue of the Physiotherapy Review, were given out and when the supply was exhausted there were fifteen additional requests for copies. One doctor gave us his subscription for the REVIEW.

One doctor, after examining the improvised splints, commented, "Oh, I see, if you have the gray matter you do not need so much money."

There were amusing comments, too. One doctor said he was not interested in the medical aspects, but he had a farm and he should like to know where he could purchase wire such as was used in making our splints.

Respectfully submitted,

JESSIE L. STEVENSON, Chairman.

*Held at the meeting of the American Medical Association, Atlantic City Auditorium, June 7-11, 1937.

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The Sixteenth Annual Convention

The Sixteenth Annual Convention goes down in the history of the American Physiotherapy Association as one of the finest we have ever held. It is to be regretted that although registration was high it still represented only about one-seventh of our membership. Much was gained not only from the splendid lectures and clinics but also from the formal and informal discussion of problems at the business meetings. The exchange of ideas and friendships formed are worth more than one realizes. One appreciates that our local problems are national ones and so they affect us all.

The "Smorgasbord" held in the Hotel Lowry and served in true Swedish style was the first of the many delightful affairs arranged for us. Picture the long table covered with so many good things to eat that one plate was inadequate to hold even a sample of each. It was a thrill to see groups of people at tables busily talking with friends whom they had not seen for one, two or maybe five years. After dinner the informal reports from the chapters were presented, giving activities not included in their formal reports. Miss Lois Bayne, a physical therapist from Australia, told us of their organization in Australia and compared the work there with what she had seen in the United States.

The first business meeting on Monday morning was opened with greetings by Dr. J. T. Christison, past president of the Minnesota Medical Association and of the Ramsey County Medical Association. Constance Greene then welcomed and formally opened the convention. Committee reports which are given elsewhere in this issue occupied the entire morning. Monday afternoon cars and buses took us to the Gillette State Hospital for Crippled Children where Dr. C. C. Chatterton, Chief of the Staff, and Dr. George A. Williamson, Instructor in Orthopedic Surgery, University of Minnesota, gave us an interesting and instructive clinic on the problems dealing with the after-care of crippled children. The evening was spent in the Spanish Room of the Hotel Lowry listening to interesting papers which will be presented subsequently in the Review.

Tuesday we went to a clinic at the University Hospital in Minneapolis conducted by Dr. Wallace H. Cole who showed us patients with many interesting traumatic injuries, fractures, and peripheral nerve lesions. This was followed by Dr. Arthur A. Stiendler who had as his subject "Scoliosis." We were then taken to the Michael Dowling School which was in summer session. This is a public school, part of the Minneapolis school system, which was built away from the hustle and bustle of the city in a beautiful wooded section high on the bluffs over-looking "Ole Man River." It is a most complete and attractive unit, having facilities for physical therapy, occupational therapy, manual training and speech training. It was truly an inspiration to see it. Luncheon had been arranged for us at the lovely Town and Country Club of St. Paul, where tables were set for us on the wide veranda, looking down on the other side of the Mississippi River. After luncheon we hurried to radios in the club and in the cars to hear our president talk over WCCO. It was in the form of question and answer, and Miss Greene did herself proud. After another short ride we were at the Shriner's Hospital, a beautiful, well-equipped hospital in a most attractive location. A tea waited for us at the Hotel Lowry to give us time to view the many fine commercial and scientific exhibits. The day was over, but wait—the evening has not yet begun. Party clothes were brought out and about two hundred people gathered around the banquet table. Dr. H. E. Hilleboe presided and introduced the guests at the speakers' table. Dr. W. A. O'Brien was the speaker of the evening. Since an extra treat had been planned, there were no other speeches. We all rushed to the Civic Auditorium where we had been given tickets to the Ice Carnival. The American Urological Association had the floor for the evening and in its honor on each corner of the ice was painted a huge kidney and in the center of the rink the inscription of the society was written. You no doubt have all seen ice carnivals but it seemed miraculous that there should be one in June. It was one of the grandest eighteen hours that we have ever had at a convention.

At the Wednesday morning session there was a free discussion of problems and policies, a report of which will be sent to you individually. Wednesday afternoon was the final session in St. Paul, and the papers presented here will also appear later in the Review.

The trip south to Rochester was delightful for the Minnesota rolling countryside is very beautiful. A splendid program had been arranged for us by Dr. Frank H.

Krusen, Head of the Section on Physical Therapy, Mayo Clinic, and his associates. We were the guests of The Mayo Clinic at a delicious luncheon at the Kahler Hotel. Dr. M. S. Henderson, Head of the Section on Orthopedics, brought greetings from the Board of Governors. A tour of inspection was made through the Physical Therapy Department at The Mayo Clinic, Colonial Hospital and St. Mary's Hospital and of the Fever Therapy Department at St. Mary's Hospital, and Occupational Therapy, "Little Green House."

The Sixteenth Annual Convention closed, and we all scattered north, east, south and west, expressing sincere appreciation to the Minnesota chapter for arranging such a worth-while program with the many social sidelights.

Next year Boston is the hostess city,—plan now for us all to meet again in the "Hub."

Address of President

First, I should like to extend a word of greeting from the Executive Committee to all the members present. We are delighted to be in St. Paul and to see so many of you here.

I suppose the present Executive Committee has established a precedent—in one respect at any rate. We have had a baby this year. The one most closely connected with this event is Winifred Tougas Willard whom many of you know. We are sorry that she could not come with us, but she sent her greetings to you all.

We have had a busy year. There are several problems of interest to us all which should be carefully considered at this meeting. It is essential in developing an opinion on these various matters to hold, so far as possible, a national point of view. Local conditions vary, but if this association is to remain strong and influential, it must be unified. We must try to consider impersonally the needs of the association as a whole and also its relationship to other groups with similar interests.

A number of contacts with other associations have been made this year.

Mildred Elson has been appointed to serve on the Advisory Board of the Services for Crippled Children under the Social Security Act.

Florence Phenix, Education Committee Chairman, has been meeting with the committee of the N.O.P.H.N.

Janet Merrill has been appointed to serve on the Advisory Board of the American Registry of Physical Therapy Technicians.

Lucy Blair has been appointed to serve on the Board of "The Crippled Child."

These connections have broadened the influence and service of our association and show us that the field of physical therapy is constantly growing.

In carrying on the affairs of the association through the Executive Committee, we have further developed the bulletin which was started a few years ago. All matters of importance are sent to the eleven members of the Executive Committee for discussion and voting. This gives greater representation to the various sections of the country in establishing the policies of the organization than would otherwise be possible.

You will be interested I am sure to hear the reports of the various officers and committee chairmen.

CONSTANCE K. GREENE

Report of the Executive Committee

The two official meetings of the Executive Committee, as arranged for by the Constitution, were held on December 22, 1936, and June 26, 1937.

Those present in December were Miss Greene, Miss Fredrickson, Mrs. Willard, Miss Leverone, Miss Monro, and Mrs. Brown—and Miss Elson representing THE PHYSIOTHERAPY REVIEW.

Those present in June were Miss Greene, Miss Fredrickson, Miss Leverone, Miss Monro, Miss Beard, Mrs. Brown, Miss Irvine, and Miss Phenix.

The officers held twenty-two additional meetings of routine or special business on September 10, 15, 29; October 1, 22; November 18; December 10, 22, 1936; January 20, February 24, March 7 (special), 12, 19; April 1, 5, 9, 16, 20 (special), 24; May 5, 18, 25; June 23, 1937, making a total of twenty-four meetings for the year.

The first meeting to be held after the close of the 1936 convention provided for the office set-up incidental to the change of officers.

Miss Florence Phenix was appointed Chairman of the Committee on Education to succeed Miss Elson, who accepted the editorship of THE PHYSIOTHERAPY REVIEW.

Miss Helen Foss was appointed chairman of the Committee on Publicity.

Miss Helen Kaiser was appointed chairman of the Committee on Legislation.

For the new Advisory Council, Dr. Elliott G. Brackett, Dr. William T. Green, and Dr. Sumner Roberts, all of Boston, accepted an invitation to serve with Dr. John S. Coulter of Chicago, who has already served a number of years.

The cordial invitation which the Minnesota Chapter extended to the Association to hold its 1937 convention in St. Paul was accepted by the Executive Committee. Miss Hindman, President of the Minnesota Chapter, was appointed local chairman of convention to work with Miss Dorothy Fredrickson, the National Chairman of Convention.

At the invitation of Dr. Hood, Chairman of the General Advisory Committee for Crippled Children under the Social Security Act, Miss Mildred Elson was appointed to serve on that committee for a period of two years and attended the conference held in Washington, D. C., in October 1936. To serve with Miss Elson as a sub-committee representing our Association

to draw up recommendations for the outline of physical therapy treatment as it applies to the crippled child under the Social Security Act, the following members were appointed: Miss Gertrude Beard, Miss Florence Phenix, and Miss Jessie Stevenson.

It was voted in October 1936 that the American Physiotherapy Association adopt as their list of approved schools the list published by the American Medical Association in the Journal of the American Medical Association for August 29, 1936.

Miss Josephine Rathbone, President of the New York Chapter, was invited to speak on the program of the Latin-American Congress of Physical Therapy, X-Ray, Radium, at its meeting in Guatemala in March 1937, and it was suggested that Miss Rathbone represent the American Physiotherapy Association. The Executive Committee did not vote in favor of this and later Miss Rathbone decided not to attend the meeting.

In November 1936 the Congress of Physical Therapy represented by Dr. Bierman of New York, invited the American Physiotherapy Association to appoint a representative of the American Physiotherapy Association to serve on the Advisory Council of the American Registry of Physical Therapy Technicians. Miss Janet B. Merrill, of the Children's Hospital, Boston, was so appointed to serve four years. It was this invitation and many questions from members of the Association which opened the discussion of the American Registry of Physical Therapy Technicians, which has continued through this year and which is to be more fully discussed in the business session of the convention. By letter in January 1937, the entire membership was notified of the existence of this registry, and in May 1937, a second letter was sent informing each member of the changes in the set-up of the Registry which extended the date of and requirements for registration. In each letter it was specifically stated that the Association was not in any way urging the use of the registry but would leave it to the individual to so decide. A fuller report of the business relating to the registry will be read as it is presented for discussion.

Through the Committee on Publicity, arrangements were made for an exhibit of the American Physiotherapy Association in conjunction with the Chicago Visiting Nurse Association to be shown at the American Medical Association convention in Atlantic City, June 7th to 12th, 1937, the title of the exhibit to be "Improved Physical Therapy Equipment for the Home Care of Anterior Poliomyelitis." Also a continuous film demonstrating early physical therapy and orthopedic nursing care was arranged. Miss Jessie Stevenson and Miss Coralyn Davis, members of the American Physiotherapy Association in the Department of Physical Therapy of the Chicago Visiting Nurse Association, were in charge of this exhibit.

To facilitate the handling of applicants for Chapter membership, an arrangement has been made whereby application blanks accompanied by necessary credentials and letters of recommendation be sent through the Chapters to the National Committee on Membership to be acted upon by the Executive Committee, as are the applications for membership-at-large.

It has been proposed that the Committee on Education be enlarged, to consist of one chairman and two subchairmen, and that the Nominating Committee prepare one ballot for the nomination of officers at each election. These two proposals will be arranged in the form of amendments to come at a later business meeting at this convention.

Vocational Bureau

For the past four years, since the revision of the Constitution and By-Laws, the National secretary has conducted the work of the Vocational Bureau, which formerly functioned under a special chairman.

During the past year forty members have been carried on the files as applicants. There have been twenty-five vacancies representing California, Colorado, Connecticut, Kentucky, Indiana, Illinois, Iowa, Massachusetts, Michigan, Minnesota, New York, Ohio, Pennsylvania, Rhode Island, Texas, Virginia, West Virginia, and Wisconsin.

The result in figures show:

40 members notified of positions.

8 applicants heard from as definitely placed.

10 applicants still on file awaiting specified localities or types of work.

4 applicants replied that positions were obtained outside our service.

18 applicants still on file but have never answered definitely whether or not they have accepted positions.

A notice of this service has been placed in the PHYSIOTHERAPY REVIEW with the hope that members would avail themselves of this opportunity.

This report closes with reports of Association chapters received to date:

Respectfully submitted,

EDITH MONRO, Secretary.

Central New York:

Number of Active Members: Senior 6; Junior 1.

New Members: Senior 1; Associate 5.

Number of Meetings held during the year: 4.

Lectures and speakers heard during the year: 6 lectures in Anatomy given by Miss Katherine Sibley, Syracuse University, Syracuse, New York.

Chicago:

Number of Active Members: Senior 72; Junior 4.

New Members: Senior 4; Junior 1.

Transfers from another Chapter 1.

Transfers 3.

Dropped: 6.

Number of Meetings held during the year: 5.

Lectures and speakers heard during the year:

June 3, 1936: "The Spastic Child," Dr. Douglas N. Buchanan, Neurologist at Children's Memorial and Billings Hospitals, University of Chicago.

October 7, 1936: "The Present Status of Poliomyelitis in the United States," Dr. LeRoy W. Hubbard, New York, Georgia Warm Springs Foundation.

December 2, 1936: "Knee Joint Injuries," Dr. Philip H. Kruscher, Attending Surgeon at Wesley Memorial and Passavant Hospitals, Assistant Professor of Surgery at Northwestern University.

February 3, 1937: "Fractures and Some Common Complications," Dr. C. R. Zeiss, Assistant Surgeon, Carnegie Illinois Steel Company.

April 7, 1937: "Annual Business Meeting."

General Report:

The Annual Meeting of the Chicago Chapter of the American Physiotherapy Association was held at the Cordon Club, on April 7, 1937. Due to the fact that there was considerable business to be discussed at this meeting, no plans were made for a speaker.

The Tri-State Hospital Assembly met in Chicago, on May 6, 7, and 8, 1936. The Chicago and Wisconsin Chapters took part in the program. A booth stressing educational requirements in physical therapy and a two-hour program was well represented by members of both chapters, as well as hospital people who are interested in physical therapy.

Six of our Chapter members attended the National Convention held in Los Angeles, California, June 28 to July 2, 1936.

During the fall a special committee arranged for a series of lectures on the spastic, by Dr. Douglas N. Buchanan (Neurologist) of the University of Chicago. These six lectures were attended by sixty-two persons,—members of the Chapter and others who are interested in the problems of the spastic child.

Sixteen of our members took advantage of the evening course in electrotherapy arranged for them at Northwestern University Medical School during the fall and winter quarters.

Fifteen of our members enrolled in the regular course in psychology of the invalid and handicapped given during the spring quarter.

During January tentative plans were made for a series of lectures on orthopedic conditions to be given by Edward L. Compere of the University of Chicago. Enrollment for these lectures was not sufficient to warrant the completion of these plans at this time as our members had already undertaken all they felt they could carry for this year. Our Chapter members, however, expressed a desire that this or a similar series of lectures may be arranged for during the coming year.

The following articles were written by members of the Chicago Chapter during the past year for the PHYSIOTHERAPY REVIEW:

"The Making of Splints," Coralynn A. Davis, R. N., Assistant Supervisor, Physical Therapy Nurses, Visiting Nurses Association of Chicago (Nov.-Dec. 1936).

"Technic of Acetyl-Beta-Methylcholine Chloride Iontophoresis (Common Ion Transfer)," Lulu Boerner, R. N., Instructor, Department of Physical Therapy, Northwestern University Medical School (Jan.-Feb. 1937).

"Exercises for Backache Due to Functional Decompensation," Mildred Elson, Instructor in Physical Therapy, Northwestern University Medical School, Editor of the PHYSIOTHERAPY REVIEW (March-April 1937).

"The Use of Rubber Bath Sponge in Giving Foot and Leg Exercises," Kathleen Lyons, R. N., Physical Therapy Nurse, Visiting Nurse Association of Chicago (March-April 1937).

"Technic of Cleft-Lip and Cleft-Palate Massage," Pauline Plummer, R. N., Physical Therapist, Children's Memorial Hospital, Chicago, and member of the staff of Orthopedic Nurses, Visiting Nurses Association of Chicago (March-April 1937).

Our program chairman, Lillian M. Beckman, provided us with excellent speakers who gave such instructive lectures that our meetings were well attended by not only our Chapter Members but workers who are contributing to the handicapped individual's welfare in some other way than physical therapy.

Respectfully submitted,
PAULINE PLUMMER, President.

District of Columbia:

Number of Active Members: Senior 20; Junior 4.

New Members: Senior (by transfer) 2; Junior (by transfer) 2.

Transfers 1; Resigned 3.

Number of meetings held during the year: 8.

Lectures and speakers heard during the year:

Nov. 10—Dr. Levine, Hydrotherapy in Medicine.

Dec. 1—Dr. Hildenbrand, Low Back Conditions.

Jan. 12—Mr. Kendall, Presentation of movies of treatment of Anterior Poliomyelitis at Crippled Children's Hospital School, Baltimore, Maryland.

Feb.—Dr. Barger, Pyrexia and Its Value to Medicine.

March 2—Dr. Waltmen, Treatment of Malignant Diseases with X-Ray.

April—Dr. Lewis, Physiotherapy in Treatment of Fractures.

May 4—Dr. Foster, Discussion of Vitamines and Their Relation to Medicine.

Respectfully submitted,
EMMA E. VOGEL, Secretary-Treasurer.

Massachusetts:

This meeting brings to a close an interesting year in the Massachusetts Physiotherapy Association, Incorporated. This May meeting is the eighth of our monthly meetings, the first being in October 1936.

Membership:

Senior Members 49; Junior Members 7.

Resignations 1; Transfers 2.

Lectures for the regular meetings were:

Mr. Vernon Brackett, "Crippled Children's School."

Dr. A. Aitken, "Epiphseal Fractures."

Dr. Wakefield, "Social Security As It Relates to the Crippled Child."

Dr. Mark Rogers, "Sacro-Iliac Syndromes."

Special courses given during the year:

Dr. Farber—Pathology.

1. Introduction—Pathology—Dr. Farber.
2. Blood and Lymph—Dr. Johnson.
3. Anatomy & Physiology of Bone—Dr. Bennett.
4. Inflammatory Lesions of Bone—Dr. Bennett.
5. Diseases of Bone—Dr. Bennett.
6. Etiology of Bone—Dr. Bennett.
7. Diseases of Muscle—Dr. Bailey.
8. Specific Infections—Dr. Farber.
9. Tumors—Dr. Ingalls.
10. Tumors—Dr. Ingalls.

We have had many business and executive meetings concerning the registry.

We finished our lectures by having a most interesting tour of the Boston School of Occupational Therapy.

Respectfully submitted,
ISABELLE KNOPPING, Secretary.

Minnesota Chapter:

Number of Active Members: Senior 19; Junior 6.

New Members: Senior 1; Junior 5.

Members Dropped: Transfers 1.

Number of Meetings held during the year: 7.

Lectures and Speakers heard during the year:

Dr. R. Nutting, Duluth Clinic, Duluth, Minnesota—"Fever Therapy in Chorea."

Dr. Miland E. Knapp, Minneapolis—"The Treatment of Erysipelas."

Dr. H. E. Hilleboe, St. Paul—"Brief Outline of the Social Security Act's Program for Crippled Children in Minnesota."

General Report: As in previous years the Minnesota Chapter sponsored a course of study. The course given during the winter was on "Speech Hygiene," given by Dr. Bryng Bryngelson of the Speech Department of the University of Minnesota. The course was a series of eight lectures and discussions designed to orient the educators in fields of special education and others working with handicapped persons in the field of speech in its relation to specific defects of the handicapped child.

At a recent meeting of the Minnesota Medical Association the Minnesota Chapter of the American Physiotherapy Association had a booth. The exhibit included a map showing the distribution of the Association throughout the state, and pictures of the work in various local physical therapy departments. Pamphlets telling the history and work of the American Physiotherapy Association were given out.

There has been no legislation in the state in regard to physical therapy during the past year.

Most of the time in recent months has been spent on convention plans and the Minnesota Chapter is very proud to be hostess for the coming national convention.

Respectfully submitted,
DOROTHY E. BAETHKE, Secretary.

New Jersey Chapter:

Number of Active Members: Senior 11; Junior 1.
New Members: Senior 11; Junior 1.
Members Dropped 1; Resigned 1.
Number of Meetings held during the year: 3.
Lectures and speakers heard during the year: 2.
General Report: New York Chapter meetings are also available to members. These are not included in our own report.

Respectfully submitted,
ROSALIE M. SULLIVAN, Secretary.

New York Chapter:

Number of Active Members: Senior 41; Junior 9.
New Members: Reinstated 4; Senior 3; Junior 3; Associate 1.
Members Dropped: Transfers 2; Dropped 1; Resigned 2.
Number of Meetings held during the year: 8 regular; 5 executive.
Lectures and speakers heard during the year:

October—Dr. Richard Kovacs—"The London Conference." Miss Mary McMillan, one of the founders of our Association, was on a visit here and told us about her work at the Peking Union Medical College in Peking, China.

November—Dr. Ernest Myers—"Conservative Measures in Treatment of Low Back Pain." Dr. Mather Cleveland—"Operative Procedures in Low Back Pain."

December—New York Orthopedic Hospital. This was a special meeting for discussion of the Registry. Dr. William Bierman was the chief speaker. Minutes of this meeting were sent to National Secretary.

January—Psychiatric Institute, Presbyterian Medical Center. Special program arranged by the staff of the Department of Rehabilitation of Motor Disorders, of the Neurological Institute.

February—Teacher's College, Columbia University—Dr. Donald Thorburn—"Manipulative Therapy."

March—Hospital for Ruptured and Crippled—Miss Olivia Trevett of the Wingfield-Morris Orthopedic Hospital, Oxford, England, and Miss Signe Brunnstrom—"Physical Therapy in England and the Scandinavian Countries."

May—Jersey City Medical Center, Jersey City, N. J.; combined meeting of the New York and New Jersey Chapters. Dr. John D. Currence—"Hydrotherapy." Dr. Charles Brook—"Physical Therapy in Cardiac Vascular Disease."

May—Teacher's College, Columbia University. Annual Meeting. Election of three Members-at-Large and a Vice President. Miss Rathbone, President, is planning to be away for a year and Miss Blech, Vice President, will assume her duties, necessitating the election of a Vice President.

Respectfully submitted,
HELEN F. REGAN, Secretary.

Northern California Chapter:

Number of Active Members: 40.
Number of meetings held during the year: 7.
Lectures and speakers heard during the year: 2 separate lectures, 4 lectures composing a group.

Respectfully submitted,
MRS. H. C. DOYLE, President.

Ohio Chapter:

Number of Active Members: Senior 43; Junior 5.
New Members: Senior 6.
Members Dropped: Transfers 1; Resigned 2.
Number of meetings held during the year: 2 Ohio meetings, 4 Cleveland District meetings, 3 Columbus District meetings.
Lectures and speakers heard during the year:
"Early Motion in Fractures"—Dr. R. Reich.
"Neurologic Principles in the Treatment of the Spastic Child"—Dr. Fetterman.
"Physiotherapy and the Growing Child"—Dr. C. F. Francis.
"Deltoid Bursitis"—Dr. Harlan Wilson.
"Birth Hemorrhage to Produce a Spastic Child"—Dr. H. E. LeFever.
"Interrelationship of Orthopaedics and Physiotherapy"—Dr. John A. Judy.
"The Bio-Chemistry and Physiology of Muscular Fatigue"—Dr. D. R. McCullough.
Address—Dr. J. H. J. Upham, President-elect of the American Medical Association.
"Psychiatrist in the Criminal Court"—Dr. Royal Grossman.
"Scoliosis"—Dr. Miller—demonstration of Dr. Steindler method.

General Report: Ohio is very proud of her young state chapter with two districts, one in Cleveland and one in Columbus. Several members from Cincinnati have asked for a district there and we hope to have one there within a year. Toledo has a small group and we hope to organize a district when enough interest is shown. Our chapter continues to be a very active one and is a loyal supporter of the American Physiotherapy Association.

Respectfully submitted,
RUBY I. KOCH, Secretary.

Pennsylvania Physiotherapy Association:

Number of Active Members: Senior 64; Honorary 4.
New Members: 3.
Members Dropped: Transfers 1.
Number of meetings held during the year: 7.
Lectures and speakers heard during the year:
Miss Mary McMillen, Rockefeller Foundation, China.
Mr. S. Paul Campbell, Pennsylvania Hospital, Philadelphia, Pa.
Dr. B. S. Troedsson, Bryn Mawr Hospital, Bryn Mawr, Pa.
Dr. William Schmidt, Jefferson Hospital, Philadelphia, Pa.
Dr. George Farrar, Temple University Hospital, Philadelphia, Pa.
General Report:

The Constitution and By-Laws of the Pennsylvania Chapter have been revised to conform, as nearly as ours allows, to those of the National Association.

At a meeting held in Pittsburgh in February, the forming of a district was discussed with the members in Western Pennsylvania. This resulted in the formation of the Western District of the Pennsylvania Chapter.

Our legislative committee has been active in aiding in the enforcement of the state laws and also in endeavoring to raise the present standards of physical therapy in the state. Several people have been assisted in the matter of state board examinations. There have been several calls for physical therapists with Pennsylvania licenses for both full and part time positions and calls from some desiring such positions. These we have tried to bring together and have thus been instrumental in placing some of our members in good positions.

A resume of the lectures and copies of the minutes were sent to the out-of-town members each month.

Respectfully submitted,
BLANCHE LARZALERE, Secretary.

Rhode Island Chapter:

Number of Active Members: Seniors 7.
New Members: Senior 2.

Members Dropped: 1.
Number of meetings held during the year: 4.
Lectures and speakers heard during the year:
Dr. Nisson, Boston—"Arthritis."
Dr. Sage, Westerly, R. I.—"Infantile Paralysis."
Dr. Bradley, East Providence—"Spastic Paralysis."

General Report: Our Chapter is gradually growing larger. We have several persons attending our meetings who are planning on joining the National Association. We also have several who for various reasons do not care to join but are very welcome at our meetings.

We have twice this year been asked by the Rhode Island Medical Association to attend lectures pertaining to physical therapy.

Respectfully submitted,
ELLEN PETERS, Secretary.

Santa Barbara:

Number of Active Members: Senior 7; Junior 2.
New Members: Junior 1; Associate 5.
Number of meetings held during the year: 9, since July 30th.

Lectures and speakers during the year: From July the 30th, 1936, when we were accepted as a Chapter, until April 15th, 1937, the Chapter held nine meetings, held on the third Thursday of each month, there being two meetings held during the month of August after the convention. Five of these meetings were given over to various local medical men who spoke on subjects relating to physical therapy treatment. Two meetings were spent in discussing the convention and its speakers, and two were given over to members of our own Chapter, one for a book report and the other, a paper on scoliosis.

General Report: The Chairman of the Program Committee and her workers have arranged the above nine meetings during the year which have proved extremely interesting and informative.

The Committee on Education has arranged to have one member of the Association present at each of the Medical and Hospital staff meetings held in Santa Barbara and to give three to five minute reports at our following Chapter meetings.

The organization of a circulating library is under way. There has been no correspondence, as yet, with the National Committee.

The Chairman of the Legislative Committee has written for laws pertaining to state legislation on physical therapy, and has sent to the National Legislative Chairman a copy of this legislation.

There has been no publicity as yet in our association, but we hope soon to write up in the daily paper a report of our meetings and speakers.

We feel that this has been a very worthwhile year, but we realize that we have just started and that there are a great many more possibilities for the year to come.

Respectfully submitted,
LUELLA E. ATSATT, Secretary.

Southern California:

Number of Active Members: Senior 54; Junior 3.
New Members: Reinstated 1; Junior 3.
Members Dropped: Transfers 9; Dropped 4; Deaths 1.
Number of meetings held during the year: 6.

Lectures and speakers heard during the year: We had a course of eight weeks with one lecture a week in kinesiology given by Dr. H. E. Billing. Dr. Roen on "Relaxation."

Respectfully submitted,
DOROTHY A. GRAVES, Secretary.

Texas Chapter:

Number of Active Members: Senior 5; Junior 1.
New Members: Senior 1; Junior 1.
Members Dropped: Transfers 2.
Number of meetings held during year: 7.
Lectures and speakers heard during the year:
Dr. Ella M. George, 3519 Euclid Ave., Dallas.

General Report: Three of the meetings were given over to discussion of the different types of physical therapy we were doing in our respective clinics.

Of the six members of our Chapter, three are here in Dallas and the others are out of town. This makes it very hard for us to do something worthwhile. We are really educating the medical profession in Texas in the use of physical therapy.

Respectfully submitted,
JOSEPH M. SCHWAIT, President.

Washington Chapter:

Number of Active Members: Senior 17; Junior 1.
New Members: Reinstated 1; Senior 2; Junior 1.
Members Dropper: Transfers 2.
Number of meetings held during the year: 9.
Lectures and speakers heard during the year:
October 8—Dr. Penny, "Circulatory Diseases."
November 12—Dr. Wannamaker, "Sinuses and Conditions of the Mouth."
February 11—Dr. Leavitt, "The Foot."
April 8—Dr. J. E. Potter, "Hyperpyrexia in Conjunction with G. C. and Syph."

General Report:
Executive Committee Meetings:
May 26, 1936—Committee Chairmen chosen.
Aug. 19, 1936—Planned entertaining of National President.
Feb. 11, 1937—Business.
May 14, 1937—Business.
Other Meetings:
June 6, 1936—Annual Picnic at Salt Water Park.
Sept. 10, 1936—Dinner meeting with Convention Reports.
Dec. 10, 1936—Christmas dinner and party at Karen Rynning's.
Jan. 14, 1937—Case discussions.
March 11, 1937—Business meeting.
May 13, 1937—Annual dinner meeting and election.

Respectfully submitted,
MRS. MIRIAM MADISON, Secretary.

Western New York:

Number of Active Members: Senior 23; Junior 3; Associate 4.
New Members: Senior 1.
Members Dropped: Transfers 3.
Number of meetings held during the year: 4.
Lectures and speakers heard during the year:

October 3, 1936—Mrs. Lois A. Whitfield, Director of Physical Therapy Department of Newark State School—"Spastic Cases and Their Progress," illustrated with moving pictures.

December 5, 1936—Dr. Frank N. Potts—"Comments on the Present Mode and Treatment of a Fracture of the Hip."

April 10, 1937—Dr. Charles Steinberg—"Arthritis," illustrated.

General Report: Educational: The Rochester group arranged for a course of lectures at the University of Rochester. These lectures were given by Dr. Lewis Goldstein and they included some dissection.

The Buffalo group was given a lecture by Dr. Tamara von Friesen on short wave diathermy with demonstration of the Burdick Short Wave Diathermy machine. Dr. Norman J. Wolf gave a lecture on fractures. X-rays of various types of fractures were shown in connection with the lecture.

Respectfully submitted,
DORIS BARS, Secretary.

Wisconsin Chapter:

Number of Active Members: Senior 38; Junior 6.
New Members: Senior 4; Junior 6; Associate 10.
Members Dropped: Transfers 2; Resigned 1.
Number of meetings held during the year: 3 regular business meetings; 2 Executive Committee meetings.
Lectures and speakers heard during the year:
Sept. 12, 1936—Hanging and dedication of Ellen Mae Hurt-

gen Memorial. Reporting of vacation activities pertaining to professional advancement by Chapter members.

Nov. 7, 1936—Annual meeting. "Internal Fixation of the Hip without Entering the Joint." Speaker, Dr. L. D. Smith.

Jan. 25, 1937—"Speech Training." Speaker, Mrs. Inez Marvin.

March 13, 1937—"Treatment of Hip Disorders," with colored movies of a hip spiking. Speaker, Dr. Louis Green.

May 8, 1937—Convention business.

The general report plus the respective committee reports present a resume of the Wisconsin Chapter's activities for the year ending May 31, 1937. Wisconsin Executive Committee wish to make the suggestion that a closer affiliation be established between National and Sectional-State Chapters regarding the acceptance of new members, particularly those who make application directly to National rather than through the local chapters with whom they wish to become affiliated. It would be helpful if the chapter secretary could be kept informed regarding prospective chapter members and to problems and irregularities relative to such members.

We would like to see more Members-at-Large become Chapter members, confining the Membership-at-Large to those who find it quite impossible to become active members of a chapter.

Respectfully submitted,

LUCY BLAIR, Secretary.

Editor's Report

The year 1936-37 saw the inauguration of an editorial staff composed of an editor-in-chief, a business manager, three associate editors, and a business secretary. This, we believe, has made possible a more efficient management of the REVIEW with a reduction of arduous labor. Associate Editor Miss Beard has been responsible for obtaining abstracts and book reviews, Miss Stevenson for reviewing current literature, and Mrs. Winters responsible for material from the chapters.

A new plan for obtaining material from the chapters was put into effect. It was found that the old plan of having chapters responsible for a certain issue of the REVIEW was not practical. To submit a stated number of articles once a year frequently met with failure, as articles were not easily obtained. An excellent paper presented at a chapter meeting the next month following their issue of the REVIEW would then be held for a year before publication. It has been found in some instances that these papers have been published in other magazines. Under the new plan this paper would be submitted immediately and would be published in an early issue. Since most chapters have at least four meetings a year, then four papers would be guaranteed for the REVIEW. This does not mean that only this number should be submitted, but that any member either of a chapter or at large should be encouraged to send in material at any time.

The appeal to the members at large and other members for articles has brought a gratifying response. We do appreciate this and wish to take this opportunity to thank these members for their contributions.

In order to make the REVIEW more practical to the members, the editorial staff felt that more articles on technique should be included. We hope to continue these and that they will be of practical benefit to the members. Since the field of physical therapy is constantly widening and in order to acquaint our members with any new developments, we will publish from time to time articles by individuals who have done creditable work in those fields. With the passing of the Social Security Act (Title V, Part 2—Services for Crippled Children) a number of state plans for the care of crippled children have been developed. Because this is so closely associated with our work, a series of these plans has been started and will be continued. At the discretion of the board, in order to avoid duplication of material in one issue, it may be necessary to hold some articles over for later issues.

The index to current literature was revived this year since we had had many requests concerning information on various subjects. We hope this has been a helpful addition.

Arrangements have been made to have the REVIEW listed in the Quarterly Cumulative Index Medicus which is a complete list of medical publications used by medical libraries for reference. This is of value to our contributors, as it makes their papers available to the entire medical profession. It is also of value to the REVIEW to have this recognition.

The staff is anxious at all times for any criticisms or suggestions which will in any way make the REVIEW better or more useful to its readers.

It was with great regret that we received the resignation of Mrs. Margaret Campbell Winters. She was a valuable member of the staff and her services will be missed.

We wish to thank all those who have made our section on book reviews and abstracts so very worthwhile as this is a very valuable part of our magazine.

The editorial staff has worked tirelessly, and their excellent cooperation has made it possible for the REVIEW to inaugurate these new policies and to carry out suggestions for the growth of the magazine as suggested by the former editor, Miss Ida Mae Hazenhyer.

Through the efforts of our business manager, Mrs. Hazel M. Putman, a definite plan for obtaining advertising was started and this has already brought about an increase. The routine work of the REVIEW has been entirely handled by our business secretary, Miss Helen G. White. Her efficiency has lessened the amount of work which formerly fell entirely upon the editor-in-chief. This has permitted the staff to concentrate their efforts on policies and plans for the increase in the scope of the REVIEW.

Report of the Business Manager

The business office of the REVIEW submits the following statistical report for the period from May 1st, 1936, to May 1st, 1937. (The financial report of the business office is included with the treasurer's report.)

Subscriptions entered, total..... 214

These consisted of—renewals	141
new subscriptions	73
Extra copies sold	93
Advertisements run	46
Copies of reprints made from articles printed in the REVIEW	11,600
Complimentary copies	
....to exchange journals	156
....to advertisers	46
....to contributors	100
....to book publishers	54
....to Advisory Committee and Council on Physical Therapy	126
....to honorary members	54
....to prospective advertisers and prospective subscribers, approximately	95
Total	651
Books sold, "Physical Therapy," by J. S. Coulter	5

We are still troubled with too numerous complaints of failure to receive the magazine. And while our analysis shows that a large share were due to difficulties in the office of the REVIEW, our members and subscribers can aid us greatly also. Our study of these complaints develops the following:

Complaints—of non-receipt of magazine—		
due to	(1) Failure to advise of change of address	7
	(2) Notice sent too late to correct list	3
	(3) Complaint before issue was due	8
	(4) Change of address sent to wrong office	4
	(5) Non-payment of dues	5
Total due to error of complainants		25 or 44.2%
due to error of stenographer		19 or 31.2%
due to miscellaneous causes		15 or 24.6%

The large number of "stenographic" errors is explained by the fact that during most of this period we did not have a regularly employed stenographer. The frequent change of personnel resulted in unavoidable errors. However, this situation has now been corrected as we have a permanent secretary in the person of Miss Helen G. White.

We urgently request the cooperation of all members and subscribers and we believe with their help these errors can be almost entirely eliminated. Please note that any notice of change of address must be received before the first of the month—the REVIEW is regularly in the mails by the 15th of the month of issue.

Also during this period we sent three copies of the REVIEW (or one-half year's subscription) to forty-five members who were in arrears with their dues before their names were removed from the subscription list on January 1, 1937. These dues are as yet unpaid.

It is interesting to note certain names on our subscription lists, other than our regular subscribers. For example, the following are found:

Hospitals	21
Schools and libraries	54
Visiting Nurse Associations, Medical Societies, etc.	28
Doctors	52
Foreign—Subscriptions	35
Foreign—Exchanges	15

The REVIEW is regularly sent to seventeen foreign countries, and our total circulation as of today is 1,142.

Respectfully submitted,

HAZEL M. PUTMAN

Report of the Treasurer

June 18, 1937

American Physiotherapy Association,
Boston, Massachusetts.

Ladies:

In accordance with your instructions we have made an audit of the cash transactions of the Association as recorded on the Treasurer's books for the year ended April 30, 1937. The following exhibits have been prepared from the records and are a part of our report.

Exhibit A. Statement of Cash Receipts and Disbursements, for the Year Ended April 30, 1937.

Exhibit B. Reconciliation of Bank Balances, as at April 30, 1937.

Exhibit C. Physiotherapy Review—Revolving Fund, for the Year Ended April 30, 1937.

The cash balances of the association were reconciled to our satisfaction with the amounts reported to us directly by the various depositaries under date of April 30, 1937.

All recorded cash receipts for the period under review were traced directly to bank statements or otherwise satisfactorily accounted for. It was found that all cash shown as received for the period had been deposited, with the exception of $879.16 representing cash collected at the 1936 convention. This cash was disbursed at the convention without having been deposited. No authorizing vouchers were on hand supporting these particular expenditures, although we examined invoices and other evidences of payment covering all but $32.40 of this amount. Vouchers signed by the President and Secretary of the Association authorizing disbursements from the treasury were examined in support of all recorded cash disbursements with the exception of the convention expenses mentioned above. We suggest that in the future vouchers be prepared covering any cash expenditures made at conventions, since the by-laws of the Association state that funds shall be paid out only upon the order of the Executive Committee and warrant signed by the President and Secretary.

We verified the footings of the Treasurer's cash receipts and disbursements records for the period. A re-

conciliation of the checking account and a summary of the cash balances are shown on Exhibit B.

On Exhibit C we present a summary of the transactions affecting the petty cash fund maintained at the office of the PHYSIOTHERAPY REVIEW at Chicago, as well as a summary of the cash received at that location in connection with the publication of the PHYSIOTHERAPY REVIEW, as set forth by the records, for the year ended April 30, 1937. A reconciliation of the cash transmitted from Chicago to the National Treasurer with the cash receipts recorded on the Treasurer's cash book is also shown on this exhibit. It will be noted that the subscriptions of H. S. Hay and Miss Letty Rowan which were transmitted to the National Treasurer on June 23, 1936, were not recorded in the Treasurer's cash book. We believe that the bookkeeping at Chicago would be simplified if an imprest petty cash fund were established and if the transactions affecting this fund were kept separate from those relating to the PHYSIOTHERAPY REVIEW.

Very truly yours,

COOLEY & MARVIN.

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

For the Year Ended April 30, 1937

EXHIBIT A

Receipts

Membership Dues:		
Senior	$5,762.00	
Junior	249.00	
Associate	48.00	
Prior or prepaid	95.00	
		$6,154.00
Physiotherapy Review:		
Subscriptions	$ 544.56	
Illustrations and reprints	476.57	
Advertising	239.55	
Sale of single copies	38.10	
Dr. Coulter's book	7.50	
		1,306.28
Convention:		
Registration fees	$ 185.00	
Exhibit space rent	357.50	
Banquet and supper tickets	382.00	
Miscellaneous	2.16	
		926.66
Application fees		224.00
Examination fees		90.00
Sale of pins and emblems		83.32
Interest received		93.89
Sundry receipts		2.35
		$8,880.50

Disbursements

Business secretary's salary		$1,337.00
Convention expense:		
Exhibition expense	$ 158.73	
Programs	210.34	
Traveling and miscellaneous	1,278.03	
		1,647.10
Executive committee's expenses		410.45
Physiotherapy Review:		
Advances to revolving fund—Exhibit C	$ 185.00	
Printing and postage	2,019.02	
Stenographic expense	901.43	
Reprints	268.28	
Dr. Coulter's book	5.63	
Miscellaneous expense	184.55	
		$3,563.91
Pins and emblems		60.30
Printing, stationery and miscellaneous		279.21
Postage and express		120.26
Professional services		65.00
Refunds:		
Dues	$ 7.00	
Illustrations	10.00	
		17.00
Fidelity bond		12.50
Returned check		2.00
Excess of receipts over disbursements—Exhibit B		1,365.77
		$8,880.50

RECONCILIATION OF BANK BALANCES

As at April 30, 1937

EXHIBIT B

Checking Account:			
National Shawmut Bank of Boston:			
Balance per bank statement			$3,323.24
Less: Outstanding checks:			
Payee	Number	Amount	
T. Virgil McDavitt	213	$11.00	
Bouve' Boston School	217	5.70	
Helen G. White	218	45.00	
Industrial School for Crippled Children	219	3.75	
Hobbs and Warren	220	1.00	
Printing Products Corp.	221	17.29	
Edna Diggdon	222	50.00	
			133.74
Balance per books April 30, 1937			$3,189.50
Savings Accounts:			
Home Savings Bank—Boston		$2,012.49	
The Boston Five Cents Savings Bank		2,020.83	
The Provident Institution for Savings in the Town of Boston		2,004.17	
			6,037.49
Total cash Balance April 30, 1937			$9,226.99

Proof of Cash

Cash balance May 1, 1936	$7,861.22
Add: Excess of receipts over disbursements—Exhibit A	1,365.77
Total Cash Balance April 30, 1937, as above	$9,226.99

PHYSIOTHERAPY REVIEW—REVOLVING FUND

For the Year Ended April 30, 1937

EXHIBIT C

Balance—deficit—May 1, 1936—as per report of prior auditors		$ 2.56
Add:		
Received from National Treasurer—Exhibit A	$185.00	
Amount due Miss Hindman as of May 1, 1936, paid directly by the National Treasurer	4.90	
Miscellaneous	.22	
		190.12
		$ 187.56

Deduct:		
Disbursements:		
Postage	$118.76	
Stationery and supplies	24.53	
Telephone and telegraph	11.73	
Money stolen	10.77	
Other expense	4.55	
		$ 170.34
Balance of fund April 30, 1937		17.22
Collections for Physiotherapy Review not transmitted to National Treasurer until May 1937		11.62
Cash balance April 30, 1937		$ 28.84
Summary of Collections for Physiotherapy Review		
Collections made for Physiotherapy Review by Business Manager		$1,287.50
Less amount not remitted to National Treasurer until May 1937		11.62
Remitted year ended April 30, 1937		$1,275.88
Add:		
In transit at April 30, 1936	$30.50	
Received by National Treasurer directly	5.00	
		35.60
		$1,311.38
Deduct:		
Amounts shown as received on Physiotherapy Review cash book not recorded on National Treasurer's cash book:		
Mrs. H. S. Hay—subscription	$2.50	
Miss Letty Rowan—subscription	2.50	
Amount included under sundry receipts	.10	
		5.10
Per Exhibit A		$1,306.28

Respectfully Submitted,

CECELIA A. LEVERONE.

Report of the Committee on Education

The nature of the work of the education committee has changed radically during the past year. Previous to this year the greater amount of attention was directed toward the establishment of educational standards for the training of physical therapy technicians. Through the Committee on Education a considerable amount of time was given to consideration of desirable content of training courses.

The responsibility involved in making decisions regarding the acceptability of certain training courses brought complications which it was felt could be more advantageously handled by the American Medical Association. The Council on Medical Education and Hospitals consequently agreed to take over the task of establishing minimum educational requirements for schools and courses engaged in the training of physical therapy technicians, inspecting such schools and courses as apply for approval, and approving courses coming up to requirements.

In the "Journal" of the American Medical Association of May 23, 1936, appeared the "Essentials of an Acceptable School for Physical Therapy Technicians." In the August 29, 1936, issue of the "Journal" appeared an additional article combining the material previously published on May 23rd, together with a listing of the schools which after inspection were found to comply with requirements.

Through the courtesy of the American Medical Association, two hundred copies of the reprint of the August 29th article were supplied the American Physiotherapy Association without charge. These reprints have been used in replying to inquiries regarding available training centers.

The impetus given activity in behalf of crippled children by the passage of the federal Social Security Act has caused interesting developments. Many states have established programs for the care and education of crippled children during the past year and a half, while other localities have definitely expanded services previously available. The demand for trained workers in various professions has exceeded the number of individuals available for employment.

The Crippled Children's Division of Children's Bureau, United States Department of Labor, was concerned regarding the possibility of establishment of some method by which workers already employed in localities in the capacity of public health nurses might receive physical therapy training in periods of not longer than six months in any one fiscal year. It is a regulation of Children's Bureau that when training is received through federal stipends the trainee must be actively employed on the job for at least six months out of each twelve month period. In order to discuss this matter, a meeting was arranged for March first of this year and included representatives of Children's Bureau, the Council on Physical Therapy, the Council on Medical Education and Hospitals and the American Physiotherapy Association. At this meeting Doctor Cutter of the Council on Medical Education and Hospitals placed his approval on the suggestion that the schools giving the present courses approved for training of physical therapy technicians might logically be approached regarding the adjustment of the curriculum to make possible the completion of the course in split periods. The restriction was made that the individual applying for such training shall register for the entire course and that not more than two years elapse between the completion of the first training period and the enrollment in the final training period. This would allow the individuals already employed locally to take the desired training by obtaining leave of absence from their position.

There has been considerable discussion this past year regarding the place of orthopedic nursing in a program for the care of crippled children. Because no standards of training had previously been established in the field of orthopedic nursing and because the scope of activity of orthopedic nurses was very indefinite, the National Organization of Public Health Nurses appointed an orthopedic advisory committee to assist in

preparing recommendations along these lines. The chairman of the Committee on Education of the American Physiotherapy Association was asked to be a member of that committee. There have been two committee meetings held, at the second of which this association was represented. There have been no decisions of great importance to this group up to the present time but a sub-committee is now working on the desirable content of a training course for orthopedic nurses. The work on this committee has been very interesting and will undoubtedly have definite contribution to make in clarifying the scope of activity of the orthopedic nurse and the physical therapy technician, regarding which there has been some confusion.

This year examinations for American Physiotherapy membership were given during the week of May 26th. Eleven individuals took the examination, five of whom failed to make an acceptable rating. The chairman of the Committee on Education wishes to take this opportunity to express sincere appreciation for the assistance of Miss Beard and Miss Elson in compiling the examination questions and in correcting the papers returned by the various examiners, and for the assistance of Misses Kaiser, Hansen, Rathbone, Rockhill, Mansfield, Stewart, Grear, Mrs. Brown and Mr. Schwait in conducting the examinations for the applicants in their respective localities.

Interesting reports have been received from the education committees of the various chapters. The details of these activities will be found in the chapter reports. However, it is interesting to note here that most of the chapters have arranged for special courses and lectures for the members during the past year.

Respectfully submitted,
FLORENCE L. PHENIX, Chairman

Report of Membership Committee

Since we are new officers this year and have changed our policies of taking in new members in the Association, it has been somewhat difficult to straighten out matters between applicants, chapters, and National Executive Committee. But in spite of this, we have taken in many new members making a large addition to the Association.

The statistics for the year are as follows:

Applications received	93
Applications accepted	59
Eligible for examination	14
Number taking examination	4
Number passed examination	4
Rejected	7
Applications pending	16
Applications carried over from 1935-36:	
Accepted	3
Eligible for examination	13
Number taking examination	7
Number passed examination	2
Number failed examination	5
Total members accepted	62
Total eligible for examination	24
Total taking examination	11
Total passed examination	6
Total failed examination	5

Respectfully submitted,
WINIFRED T. WILLARD, Chairman

Report of the Publicity Committee

Madam President:

Most of the work of this committee seems to be correspondence. Therefore, a rather detailed account of the activities pertaining to this follows:

Early in January a letter was sent to twenty chapters urging their cooperation for the exhibit at the American Medical Association convention, and also for material for this convention Less than half the chapters responded. In May, another letter went out to the chapters reminding them of convention. They were asked to send in their requests for banquet invitations, etc.

At about the same time, a letter was sent to twenty-nine commercial exhibitors, who are on the approved list of the American Medical Association. An application blank to exhibit at our convention was enclosed. On June first a follow-up letter was sent to seventeen of these firms.

Early in March a letter was sent to the thirteen approved schools giving physical therapy courses, notifying them of our convention and inviting them to exhibit any interesting material they might have.

During the month a letter was sent to ten exhibitors who were at the Physiotherapy Reunion, Children's Hospital, Boston, in June 1936.

A letter was sent in April to the physical education departments of forty colleges and universities. This too was a notification of our convention. The corrective departments were invited to attend and to exhibit. Due to the fact that our convention is in the mid-west, most of the schools contacted are in this area.

An individual application blank for our exhibit was sent to some twenty members-at-large who are abroad or who have no chapter contacts.

An announcement of our convention was sent to the editors of the following publications, with a request that a notice be placed in their spring issue: Occupational-Therapy Magazine, Archives of Physical Therapy, American Medical Journal, Physiotherapy Review.

The Executive Committee asked me to cooperate with Miss Jessie L. Stevenson of the Visiting Nurse Association of Chicago, in planning an exhibit for our association at the American Medical Association convention at Atlantic City. A very interesting exhibit of "Improvised Home Apparatus for the After-Care of

Poliomyelitis" was shown. The film prepared by Miss Mildred Elson and Dr. Blount on convalescent care of poliomyelitis was shown also.

A letter was sent to about twenty people in nearby states, who are in charge of the Social Security Program for Crippled Children.

If any of the chapters, or members-at-large, have new movies, or material of any sort, I should like to place information regarding such on file.

A more prompt and complete response from all the chapters would make the work of the Publicity Committee more effective.

Respectfully submitted,

HELEN S. FOSS, Chairman

Report of the Legislative Committee

The activities of the National Legislative Committee in the past year have been few. The policy has been one of watchful waiting as has been suggested by the American Medical Association and approved by our Executive Committee. There has been no legislation of a national character initiated and only a few threats by local legislatures to enact unfavorable legislation have occurred. None of these attempts has been successful.

In the absence of an active program it was thought advisable to assemble the most recent legislation of each state so that a summary of the entire national situation would be available in case the need arose to submit such information. An attempt has been made to assemble this data and bring the national files up to date on this subject. Chapters, however, have been slow in sending in their codes. Some of them probably feel that this is a duplication of effort as this is not the first committee to attempt this. A search of our files reveals that 1934 is the most recent date of any code, and in a great many instances the codes are dated 1928 and some as far back as 1924. The wide range of dates on these state codes suggests that previous legislative committees have met with varying degrees of success. It is to be hoped that the present committee with the cooperation of the state chairmen will in the next year bring this up to date, at least for the entire chapter membership. An encouraging sign and one that makes us hopeful of accomplishment is the gratifying response and promptness with which the chapters filed their annual reports with the national committee. A summary of these reports is as follows:

CENTRAL NEW YORK—Dorothy Lewis, Chairman

On the advice of the doctors in the locality no legislation has been attempted.

CHICAGO CHAPTER—Irma Walker, Chairman

Reports that there is no new legislation concerning physical therapy in Illinois and that her committee is keeping in close touch with the Illinois Medical Society.

DISTRICT OF COLUMBIA CHAPTER—Helen Moore, Chairman

During a routine inspection by the police department the question of licensing physical therapy technicians came up. A copy of the By-laws and Code of Ethics of the American Physiotherapy Association was sent to the Corporation Counsel's Office. No further action has been taken.

MICHIGAN—Helen King, Chairman

The chapter is keeping itself informed and there have been no new developments.

NEW YORK CHAPTER—Mary E. Hibbler, Chairman

Reports there has been considerable pressure on their state legislature to pass laws unfavorable to the practice of physical therapy, none of which, however, has succeeded in changing the present status. The situation locally, that is in New York City, has become turbulent, however, because the Civil Service Commission of New York has recently required all city hospitals to have state registered technicians. The New York Chapter's committees with the support of Dr. Bierman, President of the Congress of Physical Therapy, protested this, but the outcome is still uncertain.

OHIO CHAPTER—Anna Wetterhuus, Chairman

There has been no new legislation in Ohio. The chapter also sent a 1936 edition of the state laws concerning physical therapy.

PENNSYLVANIA CHAPTER—Sam Henshaw, Chairman

This chapter also sent a copy of its state laws corrected to 1934. The committee opposed a bill which was defeated to grant to chiropractors their own board of examiners and licensure.

SANTA BARBARA CHAPTER—Sylvia Morby, Chairman

Sent a copy of the present state laws and reports no new activities.

WESTERN MICHIGAN CHAPTER—Margaret Johnson, Chairman

Incorporated their report with that of the Michigan Chapter as they function through the same committee.

WESTERN NEW YORK CHAPTER—Esther Olson, Chairman

Reports no new legislation although there was much agitation about several bills before the state legislature.

WISCONSIN CHAPTER—Fae Henry, Chairman

There has been no new legislation and their committee is in contact with the Wisconsin Medical Association.

WASHINGTON, TEXAS, MASSACHUSETTS, and MINNESOTA

Report no state laws controlling physical therapy

and consequently have no legislative committee chairmen.

NEW JERSEY, RHODE ISLAND, SOUTHERN CALIFORNIA, and NORTHERN CALIFORNIA

Failed to send in a report.

The problems of registration which have been under consideration this year have not been handled by this committee. We wish to include, however, as part of the legislative report the statement in the latest bulletin of the Advisory Committee on Services for Crippled Children under the Social Security Act which recommends that an individual to be employed as a physical therapist in any program of services for crippled children under the Act should be

(1) A member of, or eligible for membership in, the American Physiotherapy Association, or

(2) A member of, or eligible for registry in, the American Registry of Physical Therapy Technicians.

Respectfully submitted,

HELEN KAISER, Chairman

Report on Advisory Committee of Services for Crippled Children

A meeting of the Advisory Committee to the Crippled Children's Division of the Children's Bureau, United States Department of Labor, was called in Washington, October 10 and 11, 1936. This committee acts only as the name implies in an advisory capacity with representation on the committee from the fields of orthopedics, pediatrics, neurology, hospital administration, physical therapy, public health nursing and social service. Members are appointed for a two-year period with the possibility that a professional advisory committee will be continued.

Under the Social Security Act, there is available to the states, on a matched basis, funds for the care of crippled children. The program has been developed in each state to cover complete medical care. This program must be submitted and approved by the Children's Bureau before use of federal funds is granted.

To date 46 states, including Alaska and Hawaii, have had their plans approved. Many of the questions brought up for discussion before the advisory committee influence the policies which are established by the Children's Bureau in the requirements for state programs. The question of standards for physical therapy technicians—the necessary background in experience—was raised. Since notice of the meeting to me was short and no notice of questions to be discussed was sent, I felt that no definite action should be taken. The problem was discussed together with similar ones for the public health nursing group and the social service worker in a sub-committee. It was suggested that standards for physical therapy technicians be submitted at the next committee meeting with the approval of the executive committee. A committee composed of Miss Gertrude Beard, Miss Florence Phenix, Miss Jessie Stevenson and myself met in Chicago, October 26, 1936. Standards for physical therapy workers, including training and experience for the technician in the hospital, crippled school and in field work, were suggested. This outline was then submitted to the executive committee and board of directors for approval.

On March 1, 1937, at a meeting in Chicago with representatives of the Council on Medical Education, Council on Physical Therapy, the Children's Bureau, and the American Physiotherapy Association, this plan was discussed and approved with minor changes.

At a meeting of the Advisory Committee in Washington, May 7 and 8, 1937, it was submitted to the committee and adopted. This means only that the committee recommends it to the Crippled Children's Division of the Bureau, as a suggestion which they in turn may recommend to the states' administrators. Medical social workers also submitted standards which were adopted. The public health nursing group as yet have not submitted any definite suggestion.

The meetings were most interesting and the development of the program is progressing rapidly. The problems are many—legislation and administration varies in every state and it is indeed a great task to try to anticipate what will be needed.

The Children's Bureau is to be commended for its understanding of the problems and its effort through its advisory committee to effectively meet them.

Respectfully submitted,

MILDRED ELSON.

Report of the Advisory Staff Member to "The Crippled Child"

Your representative on the Advisory Staff of "The Crippled Child" magazine has had an inactive but interesting participation in this magazine. This magazine is the official publication of the International Society for Crippled Children, Inc., and is published bi-monthly.

Your representative's first introduction to the Advisory Staff of this magazine occurred at its meeting on May 9, 1937, during the convention of the International Society for Crippled Children, in Milwaukee. This Staff is composed of a varied group of professional and lay people representative of numerous organizations and groups. At this meeting problems of publication, distribution, advertisement and article material were discussed. The members present at the meeting were asked for criticisms and recommendations for a better magazine.

The following suggestions were given by this association:

A. Pertaining to article material:

1. Articles on training schools in physical therapy as analyzed by the American Medical Association.

2. Articles on what a well-trained physical therapist means and why a well-trained physical therapist is necessary.
3. Articles on the set-up of the work for crippled children under the Social Security Act, with special reference to physical therapy from various portions of the country.
4. Articles pertaining to biographies of professional people who have contributed valiant service in the care of crippled children.

This Association, through its president and the editor of "THE PHYSIOTHERAPY REVIEW," pledged its support to the selection of authors and material.

B. Pertaining to increasing subscriptions:

1. Article material to be selected with more consideration of the various groups wishing to be served.
2. To consider the subscription to "The Crippled Child" magazine on the basis of membership in the International Society for Crippled Children and its affiliated organizations.

The first true contribution by this Association was an article entitled "Physical Therapy in a State Program for Crippled Children," by Florence L. Phenix. This material was presented at the physical therapy group luncheon at the convention of the International Society for Crippled Children and reprinted in "The Crippled Child" magazine of June 1937.

We hope that members of the American Physiotherapy Association will aid their representative by sending any suggestions to her.

Respectfully submitted,

LUCY E. BLAIR

Report of the Representative Serving on the Advisory Board of the American Registry of Physical Therapy Technicians

Since my appointment on December 2, 1936, I have received one letter from Miss Marion Smith, Executive Secretary of the American Congress of Physical Therapy, and Registrar. The letter enclosed copies of the examinations for the Registry which had been given at New York, September 7, 1936, and at Los Angeles on January 16, 1936, and asked me to comment upon them.

I have not been notified of the identity of the other members of the Advisory Board, but have understood from Dr. Bronson Crothers of Boston that he is to be the representative of the American Neurological Association.

Respectfully submitted,

JANET B. MERRILL

Amendments to the By-Laws

Article III, Section 5, e, shall be: "Members whose dues have not been paid by September 1 shall forfeit all rights to copies of the REVIEW published from that date to the date on which said dues are paid."

Article V, Section 1, shall read as amended: "a. The Nominating Committee, consisting of three active members of the Association, shall be appointed by the Executive Committee.

"b. It shall be the duty of the Nominating Committee to prepare a ticket containing the name of one candidate for each office to be presented at the first business session of the annual meeting on the even calendar years.

"c. Nominations shall be requested from the floor at the aforesaid meeting.

"d. Only those consenting to serve if elected shall be nominated either by the Nominating Committee or from the floor.

"e. The ticket prepared by the Nominating Committee shall be published in the official publication at least two months before the annual meeting on the election year.

"f. A nominating ballot shall be cast, and if there is more than one nomination for any office the name having the highest number of votes shall be declared the official candidate. Election shall then follow according to the method designated by the Chair."

Article VII — Standing Committees — shall be amended by striking out the entire Article VII and inserting: "Section I. There shall be a Committee on Education:

"a. To be composed of a Board of three members appointed by the Executive Committee, the Chairman of this Committee to be the National Chairman of the Committee on Education; second, Chairman of Membership Committee; and a third member.

"b. Duties of this Committee shall be:

"1. To determine standards of education in physical therapy acceptable for membership to the American Physiotherapy Association.

"2. To formulate and arrange for an examination for admission to Active Membership in The Association, when such an examination shall be ordered by the Executive Committee.

"3. To make a report to the Executive Committee when requested, and a full report to the annual meeting.

"Section II. There shall be a Committee on Legislation:

"a. Composed of a Chairman appointed by the Executive Committee, and the chairmen of the respective committees of chapters.

"b. Duties of this Committee shall be:

"1. To keep records and printed copies of the bills of each state and the United States, which regulate the practice of physical therapy.

"2. To investigate and advise in any matters requiring legal action concerning the American Physiotherapy Association.

"3. To make a report to the Executive Committee when requested, and a full report to the annual meeting.

"Section III. There shall be a Committee on Publicity.

"a. Composed of a Chairman appointed by the Executive Committee and the chairmen of the respective committees of chapters.

"b. Duties of this Committee shall be:

"1. To promote a continuous exchange of information between various chapters regarding both special and regular meetings, and general chapter activities.

"2. To arrange for public announcement of all meetings and matters of interest.

"3. To collect and make available exhibit material and arrange for all scientific exhibits of the Association.

"4. To make a report to the Executive Committee when requested, and a full report to the annual meeting."

Index to Current Literature

APPARATUS

The Bohler Clavicular Splint in the Treatment of Clavicular Injuries. AARON H. TRYNIN, M. D. Jour. B. & J. Surg., April 1937.

An Inexpensive Fracture Bed. ELIZABETH B. ROSS, R. N. Amer. Jour. Nurs., March 1937.

A Simple Pliable Finger Splint. JOHN E. BURCH, M. D. Jour. A. M. A., June 12, 1937.

The Treatment of Arthritis. JOHN R. HAMILTON, M. D. Virginia M. Monthly, May 1937.

ARTHRITIS AND RHEUMATIC DISEASES

Psychological Factors in Rheumatism. Jour. Char. Soc. M. & M. Gym., March 1937.

Management of Chronic Arthritis of the Knee by Intermittent Traction and a Leatherstrip Brace. Archives of P. T., June 1937.

Some Methods of Treating Rheumatic Conditions by Physiotherapy. C. F. ORR WHITE. Brit. J. Phys. Med., May 1937.

The Treatment of Rheumatoid Arthritis. RUSSELL L. HADEN, M. D. Ohio State M. J., March 1937.

The Treatment of Arthritis, JOHN R. HAMILTON, M. D. Virginia M. Monthly, May 1937.

ELECTROTHERAPY

Electrotherapy Papers: No. 2. Ultra-Violet Irradiation: Technique of Application. A. P. CAWADIAS, M. D. Brit. J. Phys. Med., April 1937.

Electrotherapy Papers: No. 3, Ultra-Violet Irradiation: Clinical Applications. A. P. CAWADIAS, M. D., Brit. J. Phys. Med., June 1937.

Electro-Medical Apparatus: Its Character, Operation and Care. No. 1. The Galvanic Current. L. G. H. SARSFIELD. Brit. J. Phys. Med., April 1937.

Electro-Medical Apparatus: Its Character, Operation and Care. The Faradic Current and Apparatus. L. G. H. SARSFIELD. Brit. J. Phys. Med., June 1937.

Treatment of Pulmonary Abscess with Short Waves. DR. SALVATORE FIANDACA. Brit. J. Phys. Med., June 1937.

The Present Status of Short-Wave Diathermy. RICHARD KOVACS, M. D. Med. World, March 1937.

Pneumonia—Especially Eighty Diathermed Cases. J. O. FITZGERALD, JR., M. D. Virginia M. Monthly, March 1937.

Status of Diathermy and Short Wave Diathermy. COUNCIL ON PHYSICAL THERAPY. Jour. A. M. A., April 24, 1937.

Short Wave Diathermy Versus Diathermy. RICHARD KOVACS, M. D. Med. Rec., May 5, 1937.

Pitfalls and Dangers in Short Wave Diathermy. DISRAELI KOBAK, M. D. Med. Rec., May 5, 1937.

Clinical Evaluation of Short Wave Diathermy in Otolaryngology. A. R. HOLLENDER. Med. Rec., May 5, 1937.

Some Points in the Technique of Short Wave Diathermy. H. TEVEL ZANKEL. Med. Rec., May 5, 1937.

Essential Physics and Physiology of Short Wave Diathermy. JEROME WEISS. Med. Rec., May 5, 1937.

Short Wave Diathermy from the Viewpoint of Long Distance Radio Interference. EGBERT VON LEPEL. Med. Rec., May 5, 1937.

Diathermy in Biliary Tract Disease. HENRY A. RAFSKY, M. D. Archives P. T., March 1937.

Effect of the Short Wave Current on the Temperature of the Paranasal Sinuses. HARRY ROSENWASSER, M. D., and WILLIAM BIERMAN, M. D. Arch. Otolaryng., May 1937.

Short Wave Therapy. H. J. TAYLOR. Lancet, May 1, 1937.

EXERCISE

How Muscles Act. H. A. CATES, M. D., Canadian J. O. T. & Physio., April 1937.

Exercise in Diabetes. Editorial in Jour. A. M. A., March 20, 1937.

FOOT CONDITIONS

The Treatment of Pronated Feet. JOHN JOSEPH NUTT, M. D. M. Times & Long I. M. J., March 1937.

The Conservative Treatment of the Weak Foot. ARMITAGE WHITMAN, M. D. M. Times & Long I. M. J., March 1937.

Some Complications of Disabled Feet. WALTER TRUSLOW, M. D. M. Times & Long I. M. J., March 1937.

FRACTURES

Fractures and Dislocations of the Cervical Spine. THEODORE PREWITT BROOKES, M. D. Jour. A. M. A., July 3, 1937.

HYDROTHERAPY

Modern Hydrotherapy. HANS J. BEHREND, M. D. Archives P. T., March 1937.

Osteomyelitis and Suppurative Joints: Salt Water Pool Treatment. A. BROCKWAY, M. D. California & West. Med. March 1937.

HYPERPYREXIA

The Blanket Method of Inducing Artificial Fever. NORMAN N. EPSTEIN, M. D., Archives P. T., April 1937.

Artificial Fever Treatment of Chorea: A Two Year Study. CLARKE H. BARNACLE, M. D., JACK R. EWALT, M.D., and FRANKLIN G. EBAUGH, M. D. Jour. A. M. A., July 10, 1937.

Morbid Anatomic Changes Following Artificial Fever, with Report of Autopsies. E. LLOYD WILBUR, M. D., and JOSEPH B. STEVENS, M. D. South. M. J., March 1937.

Hyperpyrexia in Treatment of Syphilis. Letter to the Editor in Jour. A. M. A., Feb. 20, 1937.

The Blood Picture Before and After Fever Therapy by Physical Means. FRANK H. KRUSEN, M. D. Am. J. Med. Sci., April 1937.

Hyperpyrexia in Treatment of Blennorrhagic Keratoderma. Abst. in Jour. A. M. A., May 1, 1937, from Am. J. Syp., Gonorrhea & Ven. Dis., March 1937.

Fever Therapy for Subacute Bacterial Endocarditis. T. J. DAY and F. A. WILLIUS. Proc. Staff Meet. Mayo Clinic, May 26, 1937.

Fever Therapy for Gonococcemia and Meningococcimia with Associated Endocarditis: Report of Two Cases. F. H. KRUSEN, M. D., and E. C. ELKINS. Proc. Staff Meet. Mayo Clinic, May 26, 1937.

INJURIES

Painful Shoulder. L. KRAEER FERGUSON, M. D. Ann. Surg., Feb. 1937.

Treatment of Tennis Elbow. JOHN G. KUHNS, M. D., EDWIN F. CAVE, M. D., SUMNER M. ROBERTS, M. D., JOSEPH S. BARR, M. D., JOSEPH E. MILGRAM, M. D., and ROBERT I. STERLING, M. D. Report in Section on Progress in Orthopedic Surgery, Arch. Surg., May 1937.

MASSAGE

Indications for Massage and Medical Gymnastics. Jour. Char. Soc. M. & M. Gym., May 1937.

Massage During Pregnancy and After Parturition. DORIS GOODE. Jour. Char. Soc. M. & M. Gym., March 1937.

MISCELLANEOUS

Low-Back Pain. The Anatomical Structure of the Lumbar Region, Including Variations. THEO. A. WILLIS, M. D, Jour. B. & J. Surg.. July 1937.

The Operative Treatment for Low-Back Pain. EDWARD L. COMPERE, M. D. Jour. B. & J. Surg., July 1937.

Proceedings Sixteenth Annual Convention International Society for Crippled Children. The Crippled Child, June 1937.

On Walking. LEON J. RICHARDSON. Jour. H. & Phys. Educ., March 1937.

The Role of Physical Therapy in Facial Paralysis. OLIVER P. BOURBON, M. D. Archives P. T., May 1937.

Myositis Ossificans. MARCUS H. HOBART, M. D. Am. J. Surg., Nov. 1936.

Heat as a Sensitizing Agent in Radiation Therapy of Neoplastic Diseases. WILLIAM H. MEYER, M. D. Radiology, Feb. 1937.

SCOLIOSIS. EMIL HAUSER, M. D. Arch. Surg., June 1937.

The Rationale of Certain Methods Used in Physical Treatment. SIR LEONARD HILL, M. B. Lancet, May 1, 1937.

PHYSICAL THERAPY

Physical Therapy in Bronchiectasis. M. M. WILSON. Jour. Char. Soc. M. & M. Gym., April 1937.

Physical Education and Physical Therapy—Past and Present. ERNST HERMANN. Jour. H. & Phys. Educ., June 1937.

Physical Therapy in the Modern Hospital. CLAUDE L. PAYZANT, M. D. Hospitals, April 1937.

Physical Therapy in Delayed Union of Bone. GORDON MACKAY MORRISON. Med. Rec., April 7, 1937.

Physical Therapy as Applied to the Eye, Ear, Nose and Throat. JOHN S. COULTER, M. D. Illinois M. J., Feb. 1937.

POLIOMYELITIS

Ingestion on Vitamins A, B, C and D and Poliomyelitis. JOHN A. TOOMEY, M. D. Amer. J. Dis. Child., May 1937.

Results of Poliomyelitis Among Nurses. Amer. Jour. Nurs., June 1937.

Nonparalytic Poliomyelitis Versus Choriomeningitis. PASCAL F. LUCCHESI, M. D. Jour. A. M. A., May 1, 1937.

Zinc Sulfate Prophylaxis in Poliomyelitis. E. W. SCHULTZ, M. D., and L. P. GEBHARDT, M. A. Jour. A. M. A., June 26, 1937.

The Chemical Prophylaxis for Poliomyelitis: The Technic of Applying Zinc Sulfate Intranasally. MAX M. PEET, M. D.; DEAN H. ECHOLS, M. D., and H. J. RICHTER, M. D. Jour. A. M. A., June 26, 1937.

POSTURE

Some Factors Which Influence the Balance of the Foot in Walking. The Stance Phase of Gait. R. PLATO SCHWARTZ, M. D., and ARTHUR L. HEATH. Jour. B. & J. Surg., April 1937.

Postural Deformities and Re-Education. Jour. Char. Soc. M. & M. Gym., June 1937.

RADIATION

The Treatment of Erysipelas by Ultraviolet Ray. ANNETTE M. BIEKER, M. D. J. Florida M. A., March 1937.

Ultraviolet Irradiation: Clinical Applications. A. P. CAWADIAS, M. D. Brit. J. Phys. Med., May 1937.

Ultraviolet Radiators and Their Biological Evaluation. E. O. SEITZ, Ph. D. Brit. J. Phys. Med., Feb. 1937.

SERVICES FOR CRIPPLES

After-Care of Cripples in England. A. HANSELL. The Crippled Child, April 1937.

Child Welfare Laws and the Crippled. ROBERT R. MILLER and HARRY H. HOWETT. The Crippled Child, April 1937.

The Role of the Public Health Nurse in Services for Crippled Children. NAOMI DEUTSCH. Pub. Health Nurs., June 1937.

A Curative Workshop for the Crippled. LAURA A. DRAPER. Pub. Health Nurs., May 1937.

Preparing the Crippled Child for His Future. MARY WYSOR KEEFER. Pub. Health Nurs., April 1937.

Ten Years of Orthopedic Nursing in Boston. MARGARET M. COLEMAN. Pub. Health Nurs., March 1937.

The Crippled Child in New York State. MARION DAVIS. Pub. Health Nurs., Feb. 1937.

ABSTRACTS

John S. Coulter, M. D.

Physiotherapy in Post-Operative Convalescence

James Mennell, M.D., Consulting Physiotherapist, and Lecturer to the Massage Training School, St. Thomas's Hospital; in Practitioner, CXXXVIII:3: 269, March 1937.

Manipulation

More and more the use of joint manipulation is finding a sure place in physical treatment. Roughly, patients for whom this treatment may be required can be divided into two main groups; namely, those whose recovery depends upon the breaking down of definite adhesions, and those who merely require that some lost function within the joint should be restored. When adhesions are broken down, the objective in view is to remove an impediment to function and then to maintain movement so that function may not again be lost. With this end in view, physical treatment can be as essential as is the knife to the surgeon or the drug to the physician. Pain on movement is the one great inhibition to voluntary movement; and so if the operation is to be successful, painless movement must be restored.

Breathing Exercises

With regard to operations on the respiratory tract, it is common knowledge that removal of tonsils, or of adenoids, or of both is merely the first stage in treatment. No operation of this type will teach the child to breathe properly or to adopt a better posture. The operation renders cure in these two directions possible, but it rarely follows unless the patient is taught how to gain the benefits the operation can, and should, bestow. The early treatment by physical means of cases of empyema has done much to rob the operation of the fear of subsequent deformity which was so very real not long ago. Even if all that physical treatment could accomplish consisted of teaching children and adults, too, for that matter, to blow their noses properly, it should earn acknowledgment as a most valuable prophylactic treatment. To obstruct the free passage of air by compressing the anterior nares with a handkerchief, while increasing the intranasal air-pressure, is surely the best way of forcing infected material into air-spaces which promptly become infected. It would be interesting to know what percentage of cases of antrum, sinus and mastoid trouble are due to the abuse, rather than the use, of the handkerchief; unfortunately, statistics are not available.

Prevention of Back Strain

It is a matter for regret that surgeons as a whole, while realizing the importance of posture, do not give it the same amount of thought during anesthesia and the subsequent period of recumbency. Many a patient owes prolonged and inveterate backache to the fact that the lumbar spine has not been supported during an abdominal operation. Should any surgeon be doubtful, let him lie flat upon the floor without moving for a short space of time. He will soon become conscious that unless he moves, he will inevitably suffer from the symptom commonly attributed to lumbago. And let him remember also that this is true, in spite of the fact that his muscles, in consciousness, can help to stave off the attack to a very large extent. Take away this guard and disaster often follows. This particularly applies if the patient originally had a marked lordosis. The over-flattening of a spinal curve will often cause a disorder of function in the joints which manipulative treatment alone can rectify.

Care of Abdominal Muscles

The story of the obstetrician, the gynecologist and the abdominal surgeon does not end here—rather is this merely the beginning. After child-birth, or the removal of any substantial growth from the pelvis or abdomen, the muscles of the abdominal wall will have been stretched for a considerable time, and a stretched muscle is not only a weak muscle but it is also inefficient. Hence it follows that unless steps are taken to restore the tone, strength and function of the muscles of the abdominal wall, it is incredible that they should function efficiently; still more is it unlikely, if a period of absolute rest is enforced after vigorous and severe strain, or after trauma with knife or retractors. The muscles of the abdominal wall are endowed with a very important function in respect of posture, and, indeed, they should be regarded as a definite part of the controlling musculature of the movements of the spinal column and the relationship of the column to the pelvis. So again it is small wonder if lack of attention to the hygiene of the abdominal wall should tend to disaster in the form of disordered function of the joints of the spinal column and pelvis. Even if no considerable mass is removed from the abdomen, some trauma of the muscular wall is inseparable from any abdominal operation. It is true that frequently spontaneous recovery will take place, but the reverse is often the case, and then the inevitable pain and disability will follow.

Legs and Feet

After any prolonged illness, and particularly if sepsis has been present, there is inevitable a marked loss of muscle tone, of joint, tendon, and muscle sense, and often actual stiffness in the joints, particularly of the back and the feet. As a prophylactic, therefore, massage to restore movement and elasticity to the lower extremity is often of vital importance to the subsequent happiness and well being of the individual. I have not seen a case of thrombosis in a lower extremity after confinement or operation on which massage treatment for the two limbs has been prescribed at an early date. Coincidence or not, massage is at least a rational prescription whenever the patient, through weakness or other necessity, remains for any length of time with the lower limbs immobile.

Finally, a plea may be entered for the hygiene of the feet of any patient who has been confined to bed for any cause for a considerable time. Not only does the actual power of the intrinsic muscles of the feet degenerate as the result of the lack of function, but the joints often become stiff and painful. If the body weight is placed upon feet in this condition, the advent of metatarsalgia is only what we might reasonably expect. For those who have never had it, it is impossible to realize the ghastly condition of a life in which every step spells pain. Not only is all activity curtailed, but temper is short and irritability is rife. Yet the simplest of manipulation and the

teaching of a few exercises to be performed before leaving bed for the first time would save untold hours of misery from this cause alone.

The Simple Paraffin Bath as a Means of Applying Heat Locally When Other Means Are Not Available

F. H. Krusen, M. D., Section on Physical Medicine, in Proc. Staff Meetings Mayo Clinic, 12:5:73, Feb. 3, 1937.

The application of hot towels, hot salt bags and hot fomentations is frequently unsatisfactory. There is, however, a simple method of applying heat which is available in every household in which there is a kitchen stove, an ordinary double boiler and some paraffin such as is used for sealing jelly jars. The patient may be instructed to purchase eight pounds of paraffin and place it in the inner pan of a one and one-quarter gallon double boiler (smaller boilers may be used if the large one is not available). The outer pan of the double boiler is filled with water and the whole device is placed on a stove and heated until the paraffin has reached the melting point. The paraffin is then allowed to cool just enough for a very thin scum to form on the surface. At this time the temperature of the paraffin will be approximately 75 to 80° C. A clean paint brush is then immersed in the melted paraffin and the part to be treated is painted rapidly with about a dozen coats of the liquid paraffin. The paraffin hardens as soon as it strikes the surface of the skin and will feel very warm. The thick coating will retain its own heat for a considerable period of time and it is allowed to remain for twenty or thirty minutes. The whole thickness of the paraffin coating may then be lifted off in a single sheet and put back in the double boiler for subsequent use. The paraffin may be kept sterile by bringing the water in the boiler to the boiling point. The same paraffin may thus be used many times before it becomes unfit for further application.

The Complications and Hazards of Fever Therapy: Analysis of 1,000 Consecutive Fever Treatments With the Kettering Hypertherm

Robert M. Stecher, M. D., and Walter M. Solomon, M. D., Cleveland, Ohio. In Annals of Int. Med., 10:7:1014, January 1937.

This study deals with 1,000 consecutive fever treatments divided as mentioned above, into 830 mild treatments and 170 severe treatments. The mild treatments were given to 142 patients of whom 62 had chronic arthritis, 21 had acute arthritis, 9 had rheumatic fever or chorea, 15 had syphilis and 35 had a variety of conditions. The patients with chronic arthritis had treatments at 103° F. to 104° F. for three to four hours, the others usually had 105° F. for five hours. The number of treatments per patient averaged 5.8, but varied from one treatment in 28 patients to 23 treatments in one patient. The severe treatments were given to 62 patients with gonorrhea, either genital or metastatic. An attempt was made to treat these patients at as near 107° F. as seemed consistent with safety, and this temperature was maintained in each treatment at least five hours, and preferably seven hours. Many of the patients in the first group who received mild treatments were debilitated, undernourished and aged beyond their years, while those in the second group who received severe treatments were young, robust and in excellent general health. Despite the marked difference in physical condition of the two groups, only 39, or 4.7 percent, of the mild treatments had to be discontinued, compared to 24, or 14.1 percent, of the severe treatments. Of the 39 mild treatments which were discontinued, 21 were discontinued because of insistence on the part of the patient, lack of cooperation or delirium, 5 because of blisters or burns, 8 because of diarrhea or persistent vomiting, 3 because of shock and 2 because of tetany. Of the 24 severe treatments, 12 were discontinued because of insistence on the part of the patient, lack of cooperation or delirium, 7 because of blisters or burns, 2 because of diarrhea or intestinal cramps and 3 because of shock. When these figures are arranged in parallel columns and reduced to percentages of treatments given, the difference between mild and severe treatments becomes apparent.

Summary

Attempts at artificial fever production for the past 50 years have resulted in the development of many successful methods based upon various principles. The complications and hazards of fever therapy depend primarily upon the height and duration of the fever produced.

The complications and hazards observed in 1,000 consecutive fever treatments given with the Kettering Hypertherm have been analyzed. Two types of treatment were given: (1) mild treatments, given chiefly to patients with various chronic diseases, limited to a body temperature of 105° F., and never maintained longer than five hours; and, (2) severe treatments, given to patients with gonorrhea, in which a body temperature of 106° F. to 107° F., was maintained for five to seven hours. The proportionate number of treatments which had to be discontinued, the incidence of skin burns produced, the incidence and severity of circulatory collapse were much greater in the severe treatments than they were in the mild treatments. The incidence of anorexia and excessive loss of weight after mild treatments was greater than after severe treatments. The incidence of herpes was unaffected by the severity of the treatments.

Despite the complications and hazards observed, the production of artificial therapeutic fever, with body temperatures even to 107° F. maintained for five hours or longer, under proper conditions of supervision has proved to be a practical and satisfactory procedure.

Rotation at the Shoulder a Critical Inquiry

By Lee McGregor, General Hospital, Johannesburg, in British J. Surg XXIV:95:425, January 1937.

Conclusions

The distinctive and unique features of the shoulder-joint are:

The fact that it is overhung by a closely applied osseo-fibrous arch.

The architecture of the joint is such that there is only just room for joint movements beneath this arch. Any peri-articular swelling, such as follows a sprain or contusion, means that tension and pressure occur in those movements during which the humeral tuberosities slide beneath the coraco-acromial arch, the result being pain in the execution of such movements.

Rotation of the humerus is an essential part of the movements of abduction and flexion above the horizontal plane; so much so that abduction above 90 degrees cannot be executed unless the humerus is fully rotated out, and the last 50 degrees of flexion are equally dependent on internal rotation.

These features distinguish the mechanics of the shoulder joint from all other joints; true, lateral flexion of the spine cannot occur without rotation: however, not one, but many joints are concerned in this action; rotation of the femur when the psoas flexes the hip joint is the nearest analogy in the body, but here the

joint architecture is of a much simpler type than that at the shoulder. Rotation being essential to the free movements in the joint, the correct appreciation of this phase of joint activity becomes of paramount importance in the superintendence of cases of disease or injury at the shoulder. As the range of rotation of the humerus is at its maximum with the arm at the side of the body, it is reasonable to instruct the physical therapist to exercise the rotary function of the joint with the limb in this position, more especially as the sufferer will tolerate this movement better here than with the limb raised. Abduction in the frontal plane, particularly if combined with full outward rotation of the arm, is an extremely uncomfortable position for a recently injured shoulder; moreover, it is a position which is of hardly any economic value and should therefore be discontinued as a method of rigid fixation. In cases of peri-arthritis, the mid position is that which is indicated on anatomical and physiological grounds and is, furthermore, a position which can be assumed or maintained with far less discomfort.

Summary

Full outward rotation of the humerus is essential to the performance of full abduction (Martin).

Full inward rotation of the humerus is essential to the performance of full flexion.

With the arm vertical no rotation of the humerus is possible. The degree of rotation increases from above down and is maximal with the arm at the side.

Horizontal abduction in the frontal plane combined with full external rotation of the arm is a movement seldom if ever used.

The position defined in the above is one which causes extreme discomfort.

Fixing the humerus in this attitude in injuries at the shoulder should therefore be discontinued.

The mid position is that in which the joint should be splinted. It is anatomically and physiologically sound and much less irksome.

Treatment of Tennis Elbow

Reported in Section on Progress in Orthopedic Surgery, in Arch. Surg., 34:5:957, May 1937, by John G. Kuhns, M. D.; Edwin F. Cave, M. D.; Sumner M. Roberts, M. D.; Joseph S. Barr, M. D.; and Robert J. Joplin, M. D., Boston; Joseph A. Freiberg, M. D., Cincinnati; Joseph E. Milgram, M. D., New York, and Robert I. Sterling, F. R. C. S. (Edin.), Edinburgh, Scotland.

Cyriax believes that the usual pathologic picture in tennis elbow is a tear at the periosteal attachment of the extensor carpi radialis brevis muscle to the lateral epicondyle. His method of treatment, which was successful in all but one of the twenty-two cases reported, consists of deep massage over the painful region with the elbow flexed at 90 degrees. This is followed by passive extension of the forearm to 180 degrees and forced adduction of the forearm on the arm. Anesthesia is not required, and the procedure is repeated at intervals of two or three days for four or five treatments. It may be used in recent or old cases. The literature on tennis elbow is reviewed fully.

A Consideration of the Types and Treatment of Coccygodynia

By Edward G. Waters, M. D., Ph. B., F. A. C. S., Jersey City, N. J., in Am. J. Obstet. & Gynec., 33:3:531, March 1937.

Coccygodynia is a painful neuralgic condition of the tissues in the sacrococcygeoperineal region. It is relatively common in women under forty years of age, is highly disabling and painful, bizarre in its manifestations and types and involves an indeterminate pathology. It is given little attention in literature, texts, or from the profession, and less treatment. Sporadic contributions have discussed the subject matter, but their effects are not lasting. In general, they stress the form of treatment favored by the author, and treat all coccygodynias as a group.

Coccygodynia may be of different types. In this presentation these are arbitrarily grouped as follows:

1. Reflex coccygodynia.
2. Traumatic coccygodynia.
3. Neuralgia or neuritis of the coccygeal plexus.

Treatment of traumatic coccygodynia is definite. In the acute stage, bed rest is indicated with local applications of heat in the form of hot sitz baths, hot oil rectal instillations, hot rectal douches, diathermy or short wave therapy. A dislocated coccyx is manually reduced, if possible. Analgesics and sedatives are certainly indicated with dosage sufficient to give clinical relief. The acute phase is over in ten to twenty days, and the patient often obtains complete relief in spite of a persisting coccygeal deformity. When the pain becomes chronic, resort may be had to two lines of action, radical or conservative. The radical procedure of coccygeal excision, although surgically simple, should be deferred until conservative therapy has received a thorough trial. The coccyx serves as an important point of musculotendinous attachment, and its removal leaves some degree of pelvic weakness. The operation may be complicated by a disabling infection, and not infrequently after the coccyx is out the pain still persists. Therefore the operation is neither to be suggested nor lightly undertaken until conservative measures fail.

The Peripheral Circulation in Chronic Rheumatism

G. D. Kersley, M. D., M. R. C. P., in Proc. Royal Soc. Med., XXX:5:611, March 1937.

A series of cases of rheumatoid arthritis, gout and fibrositis have been investigated by means of the sedimentation rate, Arneth count, saline absorption test, glucose tolerance test, and direct observation of the capillaries, in order to correlate any abnormality of the peripheral circulation with the type and activity of the disease.

The sedimentation rate test, in which a wide bore tube was used, was of great value as an estimation of activity in the rheumatic arthritis cases, but a small group showed a normal reading. In the gouty subjects it was usually low but was liable to vary greatly within a short time. In the osteo-arthritic and fibrositic groups it was normal.

The Arneth count did not parallel the sedimentation rate; it was usually normal in the gouty subjects but showed abnormalities in the rheumatoid arthritics and sometimes in the oseo-arthritics (a shift usually to the left, but sometimes to the right).

The saline absorption test was valueless except in cases of gross circulatory disurbances.

The glucose tolerance test, although producing some abnormal curves, in both the osteo-arthritic and the rheumatoid arthritic groups gave normal curves, taking an average of a large number of cases.

Observation of the capillaries—notes being taken of their number, shape, etc., with a drawing eyepiece and photographs—showed a wide variation in normal individuals. This was so remarkable that the only clear

cut findings were a slight increase in tortuosity in the osteo-arthritic group—probably due to the increase in the average age of this group—and an increase in the visibility of the full length of the capillary loop and of the basal meshwork in the rheumatoid arthritics, probably due to trophic thinning of the epidermis.

Sciatic Scoliosis

By E. N. Wardle, M. Ch. Orth. Liverp., F. R. C. S. Eng. Orthopedic Surgeon to the Birkenhead and the Bootle General Hospitals; in The Lancet, CCXXXII:5926:749, March 27, 1937.

Sciatic scoliosis is a well-known clinical entity which has not yet been placed on a satisfactory pathological basis. We are all familiar with the gross variety of the syndrome, the patient with pain down one leg, his whole trunk deviated to one side and the bent knee, but in the course of these observations attention will be drawn to another class of case which at present is, I think, often labeled sciatica and left at that. Even granted that sciatica is generally recognized now as a symptom and not as a pathological condition in itself, the word is still too loosely applied. In fact, while collecting and observing this series of cases, two things have impressed themselves. First, the dramatic relief of pain obtained in some instances merely by placing the patient in the position of head suspension; secondly, that the differential diagnosis of so-called sciatica is a most important one, and that more care is necessary in defining the condition referred to when the term is used.

Treatment

Many methods of dealing with this most painful and intractable condition have been advocated. They include rest, diathermy, massage, and physical therapy generally, injection of the painful sciatic nerve with novocain, simple fixation in a plaster cast or bed, manipulation of the spine under a general anesthetic, and the application of a plaster jacket with the patient in the position of head suspension. The last-mentioned method is the only one, in my experience, in which a relapse has not followed the apparent cure of the patient. It is notable that it produces equally good results with patients of either type.

Pathology

It has been indicated that the clinical findings in these patients oppose the theory that sciatic scoliosis is due to an arthritis of the lumbar intervertebral joints, mainly on the grounds that a true arthritis should produce complete limitation of movement; it is unlikely that the symptoms would always be unilateral if arthritis were present; and that if such arthritic edema were causing pain by compression of nerve roots then it is extraordinary that the fourth and fifth lumbar roots appear to be the only ones ever affected. There is also the occasional case of alternating scoliosis to be accounted for (Capener 1933). No true alternating cases were met with in this series, but there was one patient whose history suggested that his deformity had changed.

Much work has been done in recent years on the constitution and functions of the intervertebral disc and is associated with the name of Schmorll (1927); it is known that discs higher up the column atrophy, and even herniate, into vertebral bodies. Taken in conjunction with the radiographic findings it seems possible that narrowing could easily occur at the lumbosacral junction. The direction of the deformity may mean something in elucidating the cause of this condition, for there are two possible explanations of the muscle spasm and deformity. Irritation of the affected nerve roots by pressure could produce muscle spasm reflexly on the same side of the body as the pain; and in the second place, an involuntary effort on the part of the patient to relieve pressure by opening up the neural foramen on the affected side would produce contraction of the muscles on the opposite side of the body to the pain—a contralateral deformity.

Summary

Cases of sciatic scoliosis have been divided into two types—those with and those without obvious deformity.

Fixation in a head suspension plaster has produced relief of symptoms in 26 cases.

It is suggested that the underlying cause of this condition is abnormal shrinkage of the intervertebral disc between the fifth lumbar and the first sacral segments of the spinal column.

Some Factors Which Influence the Balance of the Foot in Walking

The Stance Phase of Gait

R. Plato Schwartz, M. D., Rochester, N. Y., Associate Professor of Orthopedic Surgery, and Arthur L. Heath, Rochester, N. Y. (From the Department of Surgery, Division of Orthopedics, Rochester University School of Medicine and Dentistry) in J. Bone & Joint Surg., XIX:2:431, April 1937.

Summary

Pronation of the foot is defined in terms of the prevailing imbalance of the foot while walking.

This definition is made possible by electrobasographic records of gait.

Twenty-four girls were studied with reference to the influence of shoes on the balance of the foot while walking. Pronation was present in each case when street shoes of conventional design were worn. It was absent when the subjects wore shoes made to provide for balance of foot function in the stance phase of the step.

In these records, prevailing pronation is revealed by the overlap in weight-bearing time on heel and forefoot.

Under the influence of conventional shoes, normal feet may pronate while walking. Pronation brings strain on the whole locomotor mechanism, not on the foot alone.

The same feet do not pronate when the subject walks in shoes to meet the requirements for foot balance in the stance phase of walking.

Normal balance of function of the extrinsic muscles, which support the bones of the foot in a tendinous sling, is the mechanism essential for protection against pronation and resulting strain.

The treatment of pronation, therefore, requires that consideration be given to the foot and the leg as a unit. Only through shoes which provide balance for the foot in the stance phase of gait can we compensate for malalignment of the os calcis with the tibia and the common contractures expressed through the tendo achillis.

Status of Diathermy and Short Wave Diathermy

From Council on Physical Therapy, J. A. M. A., 108: 17: 1409, April 24, 1937.

Medical diathermy is the use, for therapeutic purposes, of heat generated in the body tissues by high frequency current, insufficient in amount, however, to produce temperatures high enough to destroy the tissues or impair their vitality.

The first method is the one by which conventional diathermy is applied. The frequency of oscillations is

usually from one-half million to two million cycles per second.

The second method for the local application of diathermy currents is the use of a high frequency electric field. The frequency of oscillations may be from ten million to a hundred million cycles per second. The electrodes are not in contact with the skin, as conventional medical diathermy electrodes are.

The methods of applying the electric field that have been accepted by the Council on Physical Therapy are those making use of double cuff electrodes and air-spaced electrodes. Ordinarily, cuffs are placed so that the part to be treated is midway between them. The double cuff method, according to the experiments submitted to the Council, always showed superior heating of the deep tissues of the human thigh over the pad electrode method.

Air spaced electrodes for use with the electric field have been accepted by the Council for certain technics; for example, when placed on the same side of the part to be treated, and in some instances when applied on either side of the part.

The third method of heating tissues by high frequency currents is by electromagnetic field, or so-called electromagnetic induction. In this method the current is carried to the patient through a flexible, heavily insulated cable, which is wound around the part to be treated in the form of coils or loops. The part under treatment is separated from the coil or loop by a towel for the reasons mentioned.

So far as competent investigators have been able to determine, there is no demonstrable, selective thermal action, or specific biologic or bactericidal actions in vivo that may be attributed to short wave diathermy. To date, the effects produced can be explained only on the basis of the generation of heat.

The conditions in which heat is a beneficial adjunct in treatment are to be found in the Handbook of Physical Therapy published by the American Medical Association.

Results of Treatment of Lobar Pneumonia

Arthur L. Smith, A. B., M. D., F. A. C. P., Lincoln, In Nebraska S. M. J., 22:5:178, May 1937.

Diathermy

Stewart (England) believes the patient who does not respond favorably after three or four treatments by diathermy presents an almost fatal prognosis. With temporary improvement he greatly increases the dosage. There are no contraindications and any other treatment can be used with it. Twenty thousand cases treated by this method were collected and studied. No untoward effect followed this plan of treatment and it reduced the mortality rate 70 percent. In England all who have studied its effects advocate its use. This method has a sound physiologic basis and gives the patient quite a measure of relief.

In this country over 10,000 cases were collected and it is believed it gives enough relief and decrease in symptoms to recommend its trial in every case. About 40 percent believe it reduces the mortality rate while the other 60 percent have not reported the death rate. An American Medical Association report on diathermy says it is not accepted as specific treatment in pneumonia. It may be used as a counter-irritant but has no advantage over less involved means. Binger, working in the Rockefeller Institute hospital, believes it does not raise the lung temperature and says any benefit received is due to the mental attitude of the patient.

In my experience with diathermy in pneumonia I believe it reduces the pains and fever, increases the well-being and promotes sweating.

Routine Treatment

1. General care, sponging, rubbing, etc., no heavy jacket, but a light flannel gown and warm fresh air.
2. Rest and conservation of strength. Sedatives may be necessary to accomplish this.
3. High carbohydrate diet with dextrose and whiskey. Reduce if abdominal distention develops.
4. Good bowel elimination. Laxatives if necessary.
5. Water in fairly large amounts—3000 to 5000 cubic centimeters daily.
6. Quinin, the plan to be described later.
7. For cyanosis, oxygen, one to eight liters per minute and add carbon dioxide 5 percent, by oxygen tent method only.
8. For cough, codein to control it.
9. For pain (pleural) in the chest, mustard plasters, diathermy, or finally codein. Artificial pneumothorax may be added to this.
10. Tympanites. Soda bicarbonate 1 percent solution enemas, reduction of carbohydrates in the diet and hot turpentine stupes.
11. Dilatation of the right side of the heart. Venesection and in a few cases digitalis may be valuable.
12. Sodium chloride 6 to 24 grams daily to replace chloride reduction in the blood.

The Rationale of Certain Methods Used in Physical Treatment

By Sir Leonard Hill, M. B. Lond., F. R. S., Director of Research at the St. John Clinic and Institute of Physical Medicine; in Lancet, CCXXXII:5931: 1035, May 1, 1937.

Ultraviolet Light

The short ultraviolet rays penetrate so slightly that their effects are limited to the epidermis and superficial capillary loops of the cutis. The absorption of products of the damaged cell causes a flush first in evidence some hour or two after exposure. The skin next day is sharply reddened; a section of it shows that leucocytes have infiltrated among the cells of the superficial layers; granules appear in the cells round the congested capillaries. In thirty hours the reaction is increased, nuclei of the superficial cells stain dimly, and degenerated cells are to be seen. The pigment layer is disturbed and here and there the cutis is separated from the epidermis. The reaction now subsides, but the greatest swelling of the connective tissue cells is seen on the third day. The inner layer of the epidermis pigments as it and the blood vessels return to normal. The outer layer desquamates.

One of the most important actions of the ultraviolet rays is the production in the skin of vitamin D. The vitamin is produced by activation of ergosterol, present in minute amounts in the sebum. This is brought about by the shortest wavelengths of sunlight of about 2900 A. These are absent in winter and screened off by smoke pollution in cities. Rickets can be prevented by suitable exposure of the skin of infants and children to the sun or arc lights. Vitamin D is also obtained by eating food such as eggs, fish, and particularly liver oil, halibut oil being especially potent.

Therapeutic Uses

The antirachitic effect of ultraviolet light is exerted by rays at 2530-3000 A. and very weakly by those at 3130 A. The amount of energy of the shortest wavelength in sunlight—about 3000 A.—which is effective in preventing rickets is always very small. Infusoria are

killed about three times as quickly with rays at 2800 A. as with those at 3000 A., while those at 3130 A. have no effect. Haemolysis is most active at 2530 A. Erythema of the skin is produced by 2900-3000 A. and also by 2530 A. where there is a strong line in the mercury arc spectrum. These latter rays penetrate the epidermis less deeply than the 3000 A. rays of sunlight, and the resulting pigment is in consequence lighter in color; thus the sun browns the skin best. Patients who do not pigment well, such as red-haired, freckly people, have to be exposed to sun treatment with care. Protection against ultraviolet light is secured by thickening of the horny layer, and by pigmentation of the epidermis. By giving doses that produce a mild erythema once a fortnight, time is given for the erythema and desquamation to pass off, and the skin again becomes sensitive. The body can be treated in four parts; thus if treatment is given twice a week, exposure of any one part is given once a fortnight. By this plan the length of exposure can be kept short, for if the whole body is exposed each time the skin becomes less and less sensitive, and to produce an effect the exposure has to be made longer and longer.

The effect of absorption of products of sunburn from the skin may be compared with those of protein shock produced by the injection of milk or of the patient's own blood. Ultraviolet irradiation is one of the best means of producing counter-irritation, and blistering doses prove very useful in the treatment of sciatica, etc. The irradiated skin is covered with Elastoplast bandage and left untouched till healed. (Eidinow 1937).

Infra-Red Rays

The penetrating infra-red rays are of particular value in addition to the ultraviolet rays—for there seems to be no antagonism between ultraviolet and heat rays. These penetrating rays relieve pain in cases of sprain, etc., and by softening and making supple rheumatic tissues enable curative movements and massage to be carried out. The long infra-red rays are absorbed by the surface of the skin and do not penetrate; they may raise the superficial temperature from 32 to 41 or 44 degrees C., while the temperature 10 to 25 mm. below the surface is not raised more than a degree above body temperature, and then only by conduction of heat. The temperature of the surface rises quickly to a maximum, and quickly drops when the irradiation ceases. On the other hand, the short infra-red rays and red rays by penetrating may produce a rise to 40 degrees C. 25 mm. below the surface, while the surface is raised only to 38 degrees. In this case the maximum rise and fall are reached more slowly; there is a drop of temperature from within outwards, and this is accompanied by a feeling of refreshment and relaxation.

It must be kept in mind that infra-red radiation that will not go through a thin layer of water will not penetrate the epidermis. Thus only 0.5 percent of the rays from a dark heater, 15 percent of those from a carbon arc, and about 30 percent of those from a tungsten arc and from the sun penetrate 1 mm. of flesh. Oiling the skin by diminishing the scattering of the rays increases the penetration of the short infra-red and visible rays. The value of a tungsten arc no doubt depends in part on the greater number of penetrating rays coming from this source. Sonne found during irradiation with the highest endurable intensity that the surface skin temperature rose to 43.8 C. with visible and to 45.5 with the longer infra-red rays. With visible rays a maximum temperature at 5 mm. depth was then 47.7 degrees. The amount in gram-calories per sq. cm. per minute, which could be borne by the skin, was 3.11 for visible, 1.79 for shorter, and 1.33 for longer infra-red rays. The visible rays, except the red, are absorbed by the blood in the cutis, and warm this; the heat is then circulated over the body. How the red and short infra-red rays penetrate beyond the cutis is seen on placing a glow lamp in the mouth and standing in front of a mirror in a dark room.

For infra-red treatment bright sources are best, those which give off the more penetrating rays—e.g., 1,000 watt electric bulbs fitted with concave mirror reflectors, or the clinical gas lamp.

Short Waves

Beyond the infra-red is the high frequency radiation used in radio. The modern short-wave vacuum tube oscillator has allowed a study of electric waves as short as 1 metre; it is not as yet possible to generate any intensity of wave-length less than this. With waves of 100—1 metre wave length or 3—3000 million cycles per second, and the living tissue put in the field between condenser plates, and so subjected to electrical stress, a displacement current results in which the electrons in the molecules are stressed first in one direction and then in another. Any free electrons also tend to pass from molecule to molecule, forming a conduction current, and the molecules themselves, if bi-polar, tend to rotate in response to the changing potential of the field. The result is heating of the tissues. Artificial fever can thus be produced by putting the whole body, with exclusion of the head, in the field of the high frequency current. The temperature may be raised to 105°F. in 60 to 80 minutes. By so heating the body for some hours, gonococcal infection is destroyed. General paralysis of the insane has been treated successfully by this method instead of artificial production of malaria.

Local heating can be produced by the local application of the electrodes—e.g., on either side of the face; the temperature in the mouth thus being raised to 102° or 103° F. an effect that cannot be produced by hot bottles placed on either cheek, or by ordinary diathermy. A local heating of the rectum can similarly be obtained.

Short Wave Therapy

H. J. Taylor in Lancet, May 1, 1937, page 1075.

To the Editor of the Lancet:

Sir: May I draw the attention of your readers who are interested in short-wave therapy to the following quotation from a report recently issued by the American Council of Physical Therapy—a body which should certainly have its counterpart in this country.

"Much of the work of this Council in the past year has been confined to the consideration of the so-called short-wave diathermy machines. In view of the deliberations, the Council believed it was justifiable to state, based on the present available evidence, the following conclusions:

1. There is no specific biologic action of high-frequency currents.
2. There is no specific bactericidal action.
3. The therapeutic effect is due to the heat produced.

Elaborating these three conclusions, the Council felt that the general practitioner should understand that when he buys a short-wave diathermy machine he is purchasing an apparatus capable of producing heat. In the light of available evidence it has absolutely no other specific action."

I am, Sir, yours faithfully,

(Signed) H. J. Taylor.

Book Reviews

THE PHYSIOLOGICAL BASIS OF MEDICAL PRACTICE. By Charles Herbert Best, M. A., M. D., D. Sc. (London), F. R. S. (Canada), F. T. C. P. (Canada), Professor and Head of Department of Physiology, Associate Director of the Connaught Laboratories, Research Associate in the Banting-Best Department of Medical Research, University of Toronto, and Norman Burke Taylor, M. D., F. R. S. (Canada), F. R. C. S. (Edin.), F. R. C. P. (Canada), M. R. C. S. (Eng.), L. R. C. P. (London), Professor of Physiology, University of Toronto. Cloth. Price, $10.00. Pp. 1684, with 399 illustrations. Baltimore: William Wood & Co., 1937.

This volume serves to link the physiological laboratory and the medical clinic. It should be of the utmost value to the medical student and the practitioner to promote the continuity of physiological teaching into medical practice.

The scientific medical practitioner is directing his attention more and more to the study of morbid physiology in his efforts to solve clinical problems. This has been the result of drawing the clinic and the physiological and biochemical laboratories onto common ground. The authors feel that this modern trend in research should be reflected in the teaching of medical students and they therefore have given greater prominence to clinical aspects of the subject than is usual in physiological texts.

This volume is divided into sections on the blood and lymph, the circulation of the blood, respiration, the excretion of urine, digestion, metabolism and nutrition, the ductless glands and the nervous system, with seventy-three chapters and an excellent section on references. The excellent manner in which the authors have accomplished their above stated purpose is illustrated in the chapter on the blood pressure in the human subject. Here are considered the methods of measurement; palpatory and auscultatory methods; relative values of systolic and diastolic measurements; the normal arterial blood pressure; variations in blood pressure under physiological conditions; pathological variations in blood pressure; hypertension, hypertension secondary to renal disease; pathogenesis; primary, benign or essential hypertension; malignant hypertension, eclampsia; hypotension; the venous flow; factors which influence the flow of blood in the veins; the effect of gravity upon the circulation; measurement of venous pressure in man; normal venous pressure; and abnormal variations in venous pressure.

HANDBOOK OF ORTHOPEDIC SURGERY. By Alfred Rives Shands, Jr., B. A., M. D., Associate Professor of Surgery in charge of Orthopedic Surgery, Duke University School of Medicine, and Chief of the Orthopedic Service, Duke Hospital, Durham, North Carolina; Member of the American Orthopedic Association, the American Academy of Orthopedic Surgeons, and the International Society of Orthopedic Surgery. In collaboration with Richard Beverly Raney, B. A., M. D., Instructor in Orthopedic Surgery, Duke University School of Medicine. Cloth. Price, $4.00. Pp. 593, with 169 illustrations. St. Louis: The C. V. Mosby Co., 1937.

The author states that the purpose of this book is to present to the medical student and the general practitioner the fundamental facts and principles of orthopedic surgery. The book is divided into twenty-four chapters in accordance with a report of the Committee on Undergraduate Instruction in Orthopedic Surgery of the American Orthopedic Association which called attention to the fact that in several of the leading medical schools approximately twenty-four class periods of one hour's duration are profitably employed for undergraduate orthopedic instruction.

This is a concise handbook, but there is an excellent bibliography in which, under the chapter headings, are grouped most of the outstanding American and English articles on the various orthopedic subjects. The illustrations are excellent; they are original pen and ink drawings. The roentgenograms have been redrawn to emphasize their characteristic features and the student will appreciate this.

The majority of the work in a hospital physical therapy department is orthopedic. Therefore, every course for physical therapy technicians should have the recommended forty-five hours of instruction in this subject. This book is recommended as an excellent textbook for this course.

THE PRACTICE OF IONIZATION. By J. Newton Dyson, M. R. C. S. (Eng.), L. R. C. P. (Lond.), with a foreword by Elkin P. Cumberbatch, M. A., B. M. (Oxon.), D. R. M. E. (Camb.), F. R. C. P. Cloth. Price, $1.50. Pp. 178, with 9 illustrations. London: Henry Kimpton, 1936.

The first four chapters are devoted to excellent discussions on the galvanic current, the sources from which this current may be obtained, the methods of application of the galvanic current, and ionization.

In the consideration of the application of ionization for various diseases there are many optimistic conclusions. The following statement in the foreword is apropos: "Some readers will doubtless be sceptical when they peruse the accounts of the successes obtained in certain maladies, such, for example, as tinnitus and deafness." Certainly there are no clinical grounds for such statements as: "Electrical treatment is the most successful method of restoring the function of paralyzed nerves, whether the condition is due to a cerebral, spinal or peripheral lesion."

THE PATIENT AND THE WEATHER. By William F. Petersen, M. D., with the assistance of Margaret E. Milliken, S. M. Volume IV, Part 1. Organic Disease—Cardio-Vascular-Renal Disease, including a chapter on Experimental Endocarditis. By Alexander J. Nedzel, M. D., Associate Professor in the Department of Pathology, Bacteriology and Public Health, University of Illinois, College of Medicine, Chicago, Ill. Cloth. Price, $10.00. Pp. 633, with 443 illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1937.

This is the fourth volume of a most interesting series of monographs concerning the association of meteorological alterations and clinical events. In the present volume the author is primarily interested in the demonstration of the fact that organic disease may take its origin from subminimal environmental stimuli. The underlying point of view in these monographs is the demonstration of the clinical significance of organic rhythm. That rhythm, differing with the individual, with the day and with the night, with the weather, the season, the years, modified by many factors, is after all extremely simple. The author shows that the manifold clinical manifestations of too great disturbances of the rhythm are of course complex, but if the basic mechanism is recognized, the details are readily intelligible. Once recognized, the fact that disturbance of every kind can bring

about a similar response makes simple the fact that environmental change of any kind can, in the final analysis, do one of two things: increase function or decrease function, increase oxidation or reduce oxidation. Brain, kidney, stomach, mucosa or pancreas—the initial mechanism of dysfunction is identical. There are many case demonstrations of these facts in this volume.

The format of this volume is interesting as it is photo-lithographed from perfect typescript. This is an attempt of the publishers to make the publication of technical books in small editions pay for themselves. These volumes are recommended as complete reference books on the effects of meteorological alterations upon the clinical course of disease.

PHYSICAL THERAPEUTIC METHODS IN OTOLARYNGOLOGY. By Abraham R. Hollender, M. D., F. A. C. S., Associate in Laryngology, Rhinology, and Otology, University of Illinois College of Medicine, Fellow of the American Academy of Ophthalmology and Otolaryngology. Cloth. Price, $5.00. *Pp.* 442, *with* 189 *illustrations. St. Louis: The C. V. Mosby Co.,* 1937.

This volume presents a comprehensive review and clinical evaluation of all physical therapeutic methods indicated in the practice of otolaryngology. The first part is devoted to the principles and effects of physical agents and includes chapters on diathermy by Disraeli Kobak, photothermy by William Bierman, ultraviolet radiation by Frank H. Krusen, and x-rays and radium by Albert F. Tyler.

Part two considers the uses of physical agents in otolaryngology. There are chapters on affections of the external nose and the face, acute rhinitis, acute sinusitis, ionization in simple chronic rhinitis and in vasomotor rhinitis, diathermy in the reduction of the inferior turbinates, chronic sinusitis, roentgen and radium therapy of hypertrophied tonsils, electrosurgical tonsillectomy, reduction of the lingual tonsil and lymphoid tissue, laryngeal tuberculosis, affections of the external and middle ear. There are chapters on ionization in chronic otorrhea by A. R. Friel, ocular nystagmus by Sherman L. Shapiro, and hearing aids by Horace Newhart.

Part three considers neoplastic and miscellaneous problems. There are excellent chapters on the endoscopic approach to therapy by Chevalier L. Jackson and malignant neoplasms by Francis L. Lederer.

This volume is recommended to physical therapists doing work in otolaryngology. The technics for the uses of all physical agents in this field are given clearly and many illustrations are used to aid in these descriptions.

THE CURE OF HIGH BLOOD PRESSURE BY RESPIRATORY EXERCISES. By Lothar Gottlieb Tirala, M. D., Ph. D., Professor of Medicine, University of Munich. Authorized translation by Freda Douglas and Albrecht Douglas, M. D., Ph. D. Cardboard. Price, $1.25. *Pp.* 71, *with* 13 *illustrations. New York: B. Westermann Co., Inc.,* 1936.

This small monograph gives the author's treatment by systemic respiratory exercises of the high blood pressure of hypertonia. He emphasizes that on inspiration the abdomen should be expanded, which forces the descent of the diaphragm; then the patient tries to expand the thorax. On expiration the muscles of the thorax and abdomen are relaxed. He has his patients practice these exercises at least three times daily for five minutes in a lying position at first. He gives clinical records of patients which indicate that this method combined with other treatment has merit.

MEASUREMENTS OF ULTRAVIOLET RADIATION AND ILLUMINATION IN AMERICAN CITIES DURING THE YEARS 1931 *AND* 1933. *By James E. Ives, Senior Physicist and W. A. Gill, Assistant Chemical Engineer, Office of Industrial Hygiene and Sanitation, U. S. Public Health Service. Paper. Price,* 10 *cents. Pp.* 36. *Washington, D. C.: Government Printing Office,* 1937.

This pamphlet gives the intensity of antirachitic ultraviolet radiation in Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco and Washington.

APICIUS: COOKERY AND DINING IN IMPERIAL ROME. By Joseph Dommers Vehling, with an introduction by Frederick Starr, Formerly Professor of Anthropology at the University of Chicago. Cloth. Price, $7.50. *Pp.* 301, *with* 49 *illustrations. Chicago: Walter M. Hill,* 1936.

The Apicius book is the most ancient of European cookery books. This volume is a bibliography, critical review and the first English translation of this ancient book.

Apicius is the surname of several renowned gastronomers of old Rome. The older one, Marcus Apicius, lived at the time of Sulla about 100 B. C., and M. Gabius Apicius lived from 80 B. C. to A. D. 40. The book in its present state was completed about the latter part of the third century and it is almost certain that many recipes were added to a much earlier edition.

The author, according to Dr. Starr, is a Latin scholar of exceptional promise, a professional cook of pronounced success, and an artist competent to illustrate his own work. This combination has produced a beautiful and interesting book. Of the illustrations, there are fourteen facsimiles made from originals and reproductions in the author's collection, and thirty-five pen and ink drawings by the author.

It is a book of great interest to those interested in medical history as there is given interesting pre-scientific and well-balanced combinations and methods designed to guard the vitamins and dietetic values of many dishes.

LIGHT THERAPY. By Frank Hammond Krusen, M. D., Associate Professor of Physical Medicine, The Mayo Foundation, University of Minnesota, Head of the Section on Physical Therapy, The Mayo Clinic. Second Edition. Cloth. Price, $3.50. *Pp.* 238, *with* 36 *illustrations. New York: Paul B. Hoeber, Inc.,* 1937.

This is a revised and enlarged second edition of a valuable text on light therapy. It is compact and readable and should be in the library of everyone interested in light therapy.

The first chapters consider definitions, history, physics, sources, the need for more accurate selection of therapeutic rays, physiology, the technique of application of light rays, and forms of administration of light therapy. There are then ten concise chapters on the indications for ultraviolet radiation. At the beginning of each of these chapters which consider the various systems is a list, with references, of the various diseases in which ultraviolet light has been said to be of value. Following this list the author gives his views on the subject. There are chapters on the indications for luminous heat and infra-red irradiation, contra-indications to light therapy and the dangers and limitations of light therapy.

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